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The Monthly Review of the AMERICAN ELECTROPLATERS' SOCIETY

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MAY 1940

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The Monthly Review

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MAY 1940

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The MONTHLY REVIEW

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The 28th Annual Convention

The 28th annual convention of the American Electroplaters' Society will be held at Dayton, Ohio, June 10-13, with headquarters at the Dayton Biltmore Hotel. The committees under Mr. Conley's direction have worked hard to make this year's meeting an outstanding success. Mr. H. C. Leuchauer, chairman of the Educational Committee, has been working since last year's convention at Asbury Park to provide the best papers possible; a glance at the program in this issue of the REVIEW proves how well he has succeeded. In addition to this, Mr. Leuchauer has been able to provide preprints of the papers to be read at the Convention, these preprinted copies are intended for the members attending the Educational Sessions and if studied previous to the presentation of the papers, should lead to more intelligent discussions, of which there has been an apparent lack in late years.

Being an innovation at our annual meetings we will watch with interest the value of the preprinted copies as a means of reviving the Question and Answer period, which is not as popular as it once was in our branch meetings or convention sessions.

Mr. Corliss Powell, aggressive secretary of Dayton Branch and chairman of the Program Committee, is to be commended for the successful response to his appeal for ads to help finance the various activities connected with the convention.

Mr. G. Lewis Smith, chairman of the Exhibits Committee, has also been busy, trying to duplicate last year's record at Asbury Park by having all branches of the A.E.S. represented in the exhibits. We might state for the benefit of some who are not overenthusiastic about this important part of the program that many of our branches are entering into the exhibit competition in a big way. There is still time, if your branch has not fully decided to send a display of plated ware.

The chairman of publicity, Mr. W. J. Wise, has gone to the trouble of providing information regarding hotel rates, railroad, bus, and airline transportation rates, all of which we are printing in this issue of the REVIEW.

Mrs. Conley and Mrs. Cochran have the ladies' program in

charge. All members of the fair sex coming to the convention are assured of a most enjoyable time, as the committee has left nothing undone to make their visit to Dayton a memorable one.

Everything considered the Dayton men and women have done a very creditable job and are worthy of all the nice things that will be said about them when the 1940 convention has passed into history. A large representation from all our branches is expected. The value of these annual meetings is becoming increasingly apparent. The educational benefits received, the contacts made, and the opportunity to learn the other fellow's method of doing things, makes it almost imperative that everyone interested in electroplating should attend some or all sessions of the convention this year.

Our deepest appreciation is extended to President Ray Goodsell for his good work and fine cooperation during the year. We appreciate also the assistance given us by all the Members of the Executive Board, our Branch Secretaries, authors of papers and all who have helped in the work of the Society during the past year.

We are particularly grateful to Past Supreme President A. B. Wilson, Chairman of the Research Committee, for his successful efforts in soliciting contributions for research. This important part of our work has received a generous response. Our thanks to to all who have made it possible to start the new Research Program in the near future.

Railroad, Bus and Airline Transportation to Dayton, Ohio
(For hotel rates, see Page 396)

	RAILROAD FARES In Coaches		In Pullman		BUS FARES		Air Line Fares	
	One Way	Round Trip	One Way	Round Trip	One Way	Round Trip	One Way	Round Trip
Anderson, Ind.	$2.23	$4.05	$2.70	$5.40	$2.15	$3.90	—	—
Baltimore, Md.	14.11	21.70	16.95	31.80	8.46	15.25	$26.70	$48.06
Washington, D. C.	14.11	21.70	16.95	31.80	8.45	15.25	25.50	45.90
Binghamton, N. Y.	14.44	22.25	17.35	32.55	11.40	20.55	—	—
Elmira, N. Y.	13.48	21.10	16.20	30.60	10.40	18.75	—	—
Boston, Mass.	22.19	30.60	26.65	48.35	14.65	21.70	46.25	83.24
Bridgeport, Conn.	18.94	28.40	22.75	42.30	12.30	22.75	—	—
Chicago, Ill.	6.65	11.30	8.00	15.60	5.20	8.25	14.70	26.46
Cincinnati, Ohio	1.32	2.40	1.60	3.20	1.10	2.00	3.15	5.66
Cleveland, Ohio	5.19	9.00	6.25	12.25	4.10	7.40	11.30	20.34
Detroit, Mich.	4.98	8.70	6.00	11.80	4.05	7.30	10.40	18.70
Grand Rapids, Mich.	6.82	11.60	8.20	16.00	5.45	9.85	—	—
Hartford, Conn.	19.73	28.15	23.70	43.45	13.10	23.60	41.20	74.16
Los Angeles, Calif.	43.46	76.04	52.07	84.54	34.65	62.40	115.65	208.16
Milwaukee, Wisc.	8.35	14.55	10.55	19.45	5.45	9.85	19.70	35.46
Montreal, Can.	20.88	30.55	25.05	46.45	16.20	29.20	52.55	94.59
Newark, N. J.	17.32	25.60	20.80	38.55	11.20	20.20	34.30	61.74
New Haven, Conn.	19.36	27.75	23.25	42.65	12.55	22.60	—	—
New York, N. Y.	17.52	25.60	21.05	38.90	11.25	20.25	34.30	61.74
Philadelphia. Pa.	15.26	23.10	18.35	34.30	9.85	17.75	29.50	53.10
Pittsburgh, Pa.	6.53	11.10	7.85	15.30	5.00	9.00	13.30	23.94
Providence, R. I.	22.15	30.55	26.60	48.25	14.20	25.60	44.25	79.64
Attleboro, Mass.	22.99	30.55	27.65	46.85	14.50	26.10	—	—
Rochester, N. Y.	11.44	18.25	13.75	26.15	9.25	16.65	25.58	46.04
San Francisco, Calif.	43.46	76.04	52.07	84.54	34.65	62.40	121.00	217.80
Springfield, Mass.	19.73	28.15	23.70	43.45	13.35	24.05	41.20	74.16
St. Louis, Mo.	8.90	14.65	10.70	20.55	6.50	11.70	19.20	34.55
Toledo, Ohio	3.57	6.40	4.30	8.55	3.15	5.70	—	—
Toronto, Can.	13.05	20.75	15.35	25.75	8.95	16.15	—	—
Waterbury, Conn.	19.73	30.00	23.70	44.30	12.75	22.95	—	—

Modern Practice *in* Plating Zinc Alloy Die Castings

By W. W. BROUGHTON
Morris P. Kirk & Son, Inc.

Presented at the Annual Meeting of the Los Angeles Chapter of American Electroplaters' Society, Hotel Roosevelt, Hollywood, March 30, 1940.

WHEN the chairman of the Los Angeles Program Committee asked me if I would be willing to present a paper at their meeting, my first reaction was one of surprise that he should even consider making such a request of me, since in all our conversations I have made it clear to him that I was by no stretch of the imagination an electro-chemist. I was about to thank him for the honor and beg to be excused, when it occurred to me that I might be able to help the Western Chapter by obtaining from some of my friends in the East certain facts which had not been published nor were likely to be published, concerning what modifications of standard practice were being applied to the commercial electroplating of zinc base alloys. I also thought that my thorough knowledge of die casting technique could be called upon to serve a useful purpose in modifying to some extent the natural and common friction between you, the plater, and those whose province it is to produce the castings.

Die casting is, as you know, the process of forcing molten metal into closed steel dies under pressure, and its importance in industry lies in the fact that very close tolerances are possible, enabling the manufacturer to eliminate a very large proportion of his machining operations.

In the not-too-distant past, the process of die casting received a very unfortunate set-back, due to the fact that the alloys used were not of a permanent nature and caused major losses to users by reason of the growth and distortion, and frequently disintegration of the parts so produced. So frequent was this occurrence that the zinc alloys became known as "pot metal" and were considered, and rightly so, worthless by all reputable manufacturers.

Fortunately for the continuation of the industry, extensive research work in the laboratories of the New Jersey Zinc Company and others, led to a complete understanding of the causes of and

cures for the metallurgical changes which were responsible. Alloys are now available which have been tested and approved by the Anerican Society for Testing Materials, the Society of Automotive Engineers, and the American Foundrymen's Association.

This is neither the time nor the place for me to go into technical detail as to the changes in composition which brought about this vast improvement, but if there are among you any "doubting Thomases" who still feel that the General Electric Company is wrong in using almost two million dollars worth of these castings per year, and that the hundred thousand tons or more of alloy cast last year can be expected to return from consumer to manufacturer with complaints, I shall be delighted to spend as much time with you as you will allow in attempting to prove to your satisfaction how wrong you are. Assuming that you agree with the General Electric Company's engineers, and with me, and with the engineers of thousands of other firms who take advantage of the great intrinsic saving possible by this rapid and accurate means of fabricating parts, let us proceed to a discussion of those phases of die casting practice which have a bearing upon the quality of the plated surface to be expected. Let me point out to you a few of the peculiarities of the die casting process which make it difficult, and at times impossible, for the caster to furnish you with die castings whose surface will please you. Let me also point out to you a few things that you can do in order to take maximum advantage of the inherent characteristics of the metal, and avoid magnifying their inherent weaknesses—for there are weaknesses, and to quote a famous Democrat, "Let no one tell you different."

In order to produce a die casting which can be plated to not only present an attractive appearance when it leaves your plant, but to maintain that pleasant appearance sufficiently long to satisfy both your customer and his, many, many things must be exactly right. First, the alloy must be of absolutely correct composition and uncontaminated by the soft metals. Second, it must be within a very few degrees of the correct temperature for the particular die in question. Third, the machine must be of a type adapted to make that particular casting, and it must be in a condition which enables the alloy to be injected into the die at a sufficiently high pressure to insure intimate and instantaneous contact between the molten metal and the die surface. Fourth,

the die must be properly gated and vented to insure against entrapped air, to provide a smooth and uniform flow of metal to and across the surfaces to be plated, and its heating wells and cooling lines must be so arranged as to provide great uniformity of surface temperature in the die. Fifth, the significant surfaces in the die cavity must be polished, not only originally but after every few thousand castings.

To achieve the perfection indicated in the foregoing is frequently impossible, but to strive toward that end should be and usually is, the aim of all reputable diecasters. Departing from this standard of perfection invariably results in decreasing the degree of perfection of the plated coating, and increasing the difficulty experienced by the plater in obtaining a satisfactory plate.

Now let us set up an ideal set of circumstances which must obtain in order to produce the perfect plated coating on the perfect die castings. First, the castings must be properly handled from the time they come out of the die casting machine until they are delivered into the hands of the consumer. It is my firm conviction that there is no substitute for the individual wrapping or boxing of the castings immediately following the trimming operation. Boxes are easy to design which will keep the castings from nicking each other and yet afford easy access at each operation. Second, the importance of lightness of touch in the buffing and coloring operations cannot be overstressed. The failure of plated coatings can too often be traced to the heavy hand on the buffing wheel or too coarse an abrasive. The reason for this is not commonly understood, but is very simple. The sudden chill imparted by the contact of the molten metal against the steel die results in an extremely fine grain structure. As we proceed toward the center of the casting, cooling has been slower and therefore grain growth is greater and the structure less dense.

There is also a tendency in the die casting process for the metal to flow along the surface of the die until it reaches the furthest point in the cavity, and then to back up, filling out the casting. This gives rise to a sub-surface porosity which lies at times quite near the surface. If the buffing and coloring operations cut through this dense skin, exposing the larger grains and tiny air bubbles, the best cleaning and plating process will fail to bridge over and seal up the microscopic imperfections. Obviously, any such discontinuity of plated coating will adversely affect both the

original appearance and the corrosion resistance. Second, the plater must bear in mind that he is now dealing with an alloy that is extremely active chemically, and that contact with either acid or alkaline solutions for a given time will remove more metal and etch more deeply than would be the case in handling other alloys which are commonly submitted for electroplating. Were it not for the fact that nature has offset this chemical activity of zinc and its alloys to a marked degree by the rapidity with which a protective oxide film forms, the alloys would be worthless for resistance to even the mildest of corrosive conditions. But the oxide film dies form very rapidly on newly exposed surfaces, and when formed provide a continuous and impervious film which efficiently protects the base metal against further attack. Good adherence, however, cannot be obtained over an oxide coating, and the plater must therefore keep the chemical activity of zinc continuously in mind in preparing die castings for plating.

Third, the first coat on a zinc die casting must be applied from a solution designed for the purpose, and not from a solution in which other materials are being plated. Most of you are probably smiling inwardly at such fundamental advice, but I have seen, even recently, attempts made at plating zinc alloy parts in baths designed and used for steel. Fourth, in order to secure satisfactory length of service life, it is necessary to apply a heavier plated coating on zinc die castings than on brass parts. Total thicknesses of coating of a thousandth of an inch for continuous outdoor exposure, and of 3/10,000″ for indoor exposure under corrosive conditions, are generally accepted as minimum for zinc die castings. It is, incidentally, the writer's experience that even with a thousandth of an inch the maximum period of retention of lustrous surface on continuous outdoor exposure is approximately three years, although if protected during the dew forming hours of the early morning, as is the case in most automotive hardware, this life expectancy may be increased to as much as six or seven years.

And now I should like to impress upon you the need for constant cooperation between the caster and the plater. Too often I have been called upon to give an opinion as to whose fault caused a given plating failure. Too often the plater tells the customer that he cannot obtain a good plated coating on such castings, and in turn the caster is apt to tell the customer that the castings are

all right, the plater just doesn't know his job, whereas more than half the time both are partly responsible. If you receive castings which are difficult to plate, a conference should be arranged with the diecaster in an attempt to iron out the difficulty. Having had considerable experience in just such situations, I shall be very pleased indeed to help you as far as I can in improving the final results.

Platers should bear in mind that all about them are examples of die castings which have been plated cheaply and easily, and which are delivering entirely satisfactory service. What is being done elsewhere can be done equally well in their plants, provided sufficient interest and effort is exerted.

As the importance of die castings has increased over the past few years, the literature has been enriched by many references to proper methods of plating them. One of the most comprehensive appears in the 1939 edition of *Plating & Finishing Guide Book* published by *Metal Industries*. The author is Mr. E. A. Anderson, a member of the Los Angeles Research Committee and a recognized authority. However, since the exigencies of commercial production in any line inevitably result in modifications of standard practice, it was my hope that by going to men engaged in the plating of zinc alloys to the exclusion of all else, I might be able to obtain some helpful and interesting modifications of standard practice not to be found in the literature. I have therefore over the past few months been in correspondence with a number of plating plants. For obvious reasons, the identity of the contributors and their firms must be withheld, but you have my word for it that the information comes from what the newspapers call "sources believed to be reliable."

Plant A is engaged solely in the casting and plating of automotive hardware, under the most rigorous of specifications and inspection standards second only to those of the silversmith. Here great emphasis is laid upon surface of castings, records are kept of the most minute details in the casting operation, and the operators are not allowed to make any changes in temperature, pressure, speed of production, or flow of water through the die, once the optimum conditions have been established. This is done because, to quote, "If sufficient care is taken to produce castings with a surface having a minimum of chilled areas and porosity, then it is possible for anyone to plate successfully; but if poor

quality work is submitted, the best plater in the world cannot do a good job." Most of the buffing in this plant is done automatically and standard Tripoli is used exclusively. It was here emphasized that the plating might be affected if significant areas of the casting are not brought to a uniform luster and free from wheel marks. The spray-vapor-spray cycle of degreasing has been found most satisfactory in this plant, although they report great interest in developments in alkaline washing machines, because of the necessity of using a solvent with a high inhibitor content which must be watched closely lest the solvent go sour or acid through loss of inhibitor. Bright nickel is of course used in this plant, and two interesting comments were made: First, that in the estimation of my correspondent, the four well-known solutions were about equal in quality and all required close accurate control; and second, that there was much room for improvement in all of them insofar as the range of operating conditions was concerned. However, bright nickel is working so well that practically all of their parts go direct to the chrome tank. A few special shapes that receive excessive shading, require a light coloring. In response to my query concerning bright copper comes the report that their somewhat limited experience indicates a tendency toward roughness of deposit, and that therefore in spite of their knowledge of the good results obtained in other plants, they are adhering to the Rochelle type of solution.

Plant B is one of the largest jobbing shops in the country, plating a wide variety of types of castings to nearly every specification imaginable. Preference is here stated for power washing machines, although degreasers are considered satisfactory if followed through by proper subsequent operations. It is significant to note here that this firm must plate the castings submitted, over which they have no control, and is therefore understandable that they should place the emphasis on proper cleaning. The next departure from standard practice is in the acid etch which they use, consisting of a 5% solution of sulphuric acid with direct current flowing for ten seconds. The importance of a very thorough rinsing sequence, as well as a rapid dry following bright nickel plating, was stressed, the actual sequence being hot water rinse, cold spray rinse, hot water rinse, and dry in hot air. Of the bright copper solutions, two interesting comments were forthcoming. First, the beauty of the finish and the rapidity of the

plating were placed on one side of the ledger, against roughness and the difficulty in the removal of copper plating salts from the pieces. It was pointed out that adequate rinsing capacity was essential. The most interesting comment from this plant was that they had commercially plated zinc base die castings with bright copper, bright nickel, and chrome without any buffing operations between plating sequences. It was pointed out, that this was a touchy method at best, and was most effective in fully automatic equipment. About five years ago I heard Dr. Huessner, another member of the Los Angeles Research Committee, predict that within a few years all plating would be of the bright type.

Plant C is primarily a die casting plant, although about half of their production must be plated. Operations here diverge from standard in several ways. Preference was expressed for a simple soak in trisodium phosphate solution for 3 minutes, in place of the usual electro-cleaner. The high speed copper solution is used, but at one-half normal concentration. It is made up of 17 ozs. per gal. of copper salts, 1 oz. per gal. of free sodium cyanide, 1½ ozs. per gal. of caustic soda, and an addition agent. The most interesting part of the report received from this plant was to me the enthusiasm expressed for the dry burnishing method of preparing castings for plating. All their small parts are now being polished in special, slow moving burnishing barrels, which produce a luster equal to that obtained by hand polishing. So effective have these barrels proven that only 120 polishers are needed instead of 400-odd formerly employed. It is carefully pointed out that this is not the usual well-known and rather makeshift barrel burnishing operation, but rather an entirely new principle which, in their opinion, is a very valuable contribution to the plating art.

In reading the replies to my letters East, I was somewhat disappointed in that I could point out so few departures from standard practice. For the purposes of preparing an interesting paper and contributing something of importance to this subject, it would have been pleasant to have received entirely divergent methods from each of the companies approached, but the dearth of such items of divergence from the usual indicates that the necessity for experimentation no longer exists in the case of the zinc alloys, and that methods have been improved to a point where all that is needed is care in every step from the production of the die casting through to the packing of the finished product.

Bright Nickel Plating *in* Full Automatic Equipment

By F. A. MAURER
General Electric Company
Ontario, California

PROBABLY everyone here is familiar with the term Bright Nickel as opposed to dull nickel. The smooth brilliant surface of Bright Nickel contrasts very markedly with the rough, dull surface of ordinary nickel. Use of Bright Nickel has made possible plating of irregular shaped objects in a brilliant finish which formerly was impossible on account of the impracticability of buffing. In many other cases it has eliminated the need for buffing nickel at a large saving. It has saved on plating cost, because only the specified thickness need be applied, with no extra thickness to allow for buffing removal. It has brought on better chrome plating, because of better throwing power of chromium on the Bright Nickel, resulting in more complete coverage on sides and on the back of the work.

The exact mechanism by which nickel is caused to plate out of solution in a smooth brilliant plate rather than a rough dull one is known to probably but a very few individuals.

We do know some of the differing characteristics however.

In a Bright Nickel plate, the crystals will probably average up much smaller than in a dull plate. One of the basic patents in the bright plating field, taken out by Max Schlotter, specifies that his agent, added to a bath, so regulates the growth of nickel crystals that they average up not greater than .0001 mm or .000004 of an inch.

In a Bright Nickel plate, the crystals are probably all oriented in a regular fashion, and are "laid over on their sides" so as to present a flat surface for reflection. Dull nickel crystals tend to be upright or on end, so that the surface is not a continuously reflecting one, but breaks up the light reflection, more or less like a piece of sand paper.

In a Bright Nickel plate, there are probably no included basic nickel compounds to detract from luster and cause non-homogeneity. The high acid content of the baths and their extreme clarity preclude possibility of foreign particles being included in

the plate. On the other hand there is some evidence of slight traces of O & S in some of the plates, indicating a slight inclusion of some of the addition agents.

There are at least two general types of Bright Nickel. One type depends upon plating an alloy of nickel with cobalt. Substances are added to the bath to cause additional brightness and to prevent hydrogen pitting. The plating of an alloy prevents crystals of either of the components of the alloy from getting large. Large crystals become irregular and cause a condition undesirable from standpoint of brightness.

The other type deposits an essentially pure nickel deposit, although in deposits from some baths of this type there may be traces of a metallic "brightener." Some brighteners that have been used are zinc, selenium, cadmium, and mercury. Most baths of this type contain at least one "regulator" of organic nature. Typical compounds which have been used for this purpose are: nickel-benzene disulfonate; nickel naphthalene trisulfonate; reaction products of substances such as turpentine oil or pine oil with sulfuric acid; ortho-toluidine sulfonic acids; naphthalene di-sulfonic acid; naphthalene mono-sulfonic acid; alpha-naphthylamine trisulfonic acid; benzene-sulfonic acid. The function of the "regulator" seems to be to control the size of the crystals in the deposit.

In addition, most baths of the second type have a surface tension reducer whose function is to pry off hydrogen bubbles from the work surface before they grow to a size that would cause pitting of the deposit. These compounds are usually the sulfuric acid esters of straight chain alcohols of high molecular weight, those having 8 or 9 carbon atoms seeming to be very good. Sulfuric acid reaction products of petroleum have been used.

There are many commercial Bright Nickel baths on the market today which are suitable for hard service. They will allow high production from them with but a minimum of control effort. How much we truly are indebted to the patient pioneering work of those men back in the very early thirties when commercial Bright Nickel had its inception!

How different a modern Bright Nickel bath is from early attempts at adding glue, glucose, gelatine, dextrine, gum tragacanth, gum arabic, cadmium, zinc, and a host of others, can be appreciated by all of you who have had experience with both.

The crude, amateurish early "bright" baths were impossible to control and deposits tended to be extremely brittle. Only a thin plate could be made to stay bright. Present-day baths actually "build brightness" on heavy plates. The plates are adherent and quite ductile.

And now that I have made a short survey of Bright Nickel plate, in a few words I want to tell of the accomplishments of our organization the past year in the Bright Nickel plating of steel and cast iron in Full Automatic Equipment. If we have achieved anything at all it has been because of splendid cooperative effort rather than any one individual's outstanding work. We had many obstacles to overcome, but I am happy to say we have the major points of operation now well under control.

We at Ontario General Electric became interested in Bright Nickel application to flatiron parts several years before our automatic machine was installed. At first we were skeptical and had to be "shown." After convincing ourselves the operation was commercially applicable; that the plate was adherent; that it was ductile; that it was not costly, but represented a cost reduction, came a long period of testing and adapting the new technique to our production. We found many things had to be different. More thorough cleaning and sulphuric dip for copper-plated parts before nickel plating were among the more important.

When a sequence of operations had been worked out, the work of specifying a fully automatic conveyor began. Exact timing in the various tanks had to be considered; the desirable drive chain speed had to be specified; transfer time between tanks was desired to be a minimum; materials of construction for the tanks had to be specified and such matters as space economy, money cost, and general features of the machine considered. A large storage tank for nickel solution had to be provided.

Eventually these matters were all worked out, the machine purchased, and erected by the end of the year 1938.

At the time of change-over we were operating, and had been for many years, a semi-automatic tank containing a dull nickel, at 124°, 30-40 amp./sq.ft., of the usual watts—bath type. The tank held 1400 gallons. Cleaning was in a conveyor machine which also applied a copper flash. Transfer was manual from cleaner to plating tank. The operation had become so standardized that there was very little trouble of any magnitude. Pitting due to gas

was the principal source of worry. Occasionally though there was a little grease pitting.

The change-over to new equipment involved tearing out cleaning conveyor to make necessary space available. Naturally there was a period of confusion for a while, because production had to continue in the old dull "nickel" while the new equipment was being erected, and all cleaning had to be by hand methods.

Before proceeding to describe the machine I want to give you some idea of the volume of work going through the tank. The machine is operated continuously 24 hours per day, 5 days a week. Through all of the rinses, copper tank, and nickel tank (which holds 4,000 gallons of solution) pass 4500-5000 sq. ft. of cast iron or steel surface to be plated every 24 hours. In addition, some portions of the work racks cannot be insulated, and they receive a plate. The current consumption runs between 60,000 and 72,000 ampere hours per day, or 2500 to 3000 ampere hours per hour. At 100% anode efficiency, the consumption of anodes in the nickel plating tank varies from 145 lbs. to 173 lbs. per day. Actually the anode efficiency is not 100% but slightly less.

As you see from the diagram of the machine there are thirteen treatment tanks arranged in a double line, with the large nickel tank at one end, through which the work makes a 180 degree turn, and a clear space at the opposite end, where loading and unloading is done.

The main drive chain of the machine which is over the tanks, pushes T-shaped carriers ahead, the weight being borne on an overhead steel rail on which the carriers slide. Directly over the space between each two tanks, there is a chain loop transfer, whose chain runs faster than the main drive chain. A pin on this transfer chain engages at the proper instant with a notch in the carrier, elevates it, carries it forward over the edges of the tanks, and lowers it again on the steel rail, ahead of a pin on the main drive chain which, coming up to the carrier, pushes it ahead to the next transfer chain where the operation is repeated.

I might say here that once these mechanisms are in adjustment they give practically no trouble. At first we had difficulty getting them timed right.

The machine has a variable speed drive, so that time of nickel plating can be varied from 7½ minutes to 30 minutes. Forward movement of the main drive varies from 13½" per minute to 54"

per minute. Time of transfer from pickup to set-down varies from 7 seconds to 28 seconds.

The spray rinses are arranged so that they spray on the work as it enters the rinse tank and as it leaves the tank. Action is electrically controlled by a G. E. direct connected limit switch driven by a chain and sprocket off the main drive of the machine. There are ten cam-operated contacts in the device, which opens and closes electrical circuit to the solenoids operating the water valves on the sprays. The sprays themselves shower the work with a fan of finely atomized water under high pressure.

The above system was worked out and installed by our Methods Engineer and Maintenance Department working under high pressure, because under full production we discovered the spray system that came with the machine was inadequate. We are proud of the operation of these sprays, which mean a lot in a successful Bright Nickel operation.

The single alkaline cleaner shown has recently been supplemented by a preliminary alkaline electric cleaner which removes practically all the grease, oil, and dirt, leaving the cleaner (shown in illustration) as a safety factor. We recommend a similar cleaning or a preliminary solvent degreasing to any who contemplate Bright Nickel. It is practically impossible to prevent some contamination of succeeding dips and acids, which will cause trouble in the nickel. Bright Nickel is particularly susceptible to trouble from free fat on the surface of work being plated.

The cleaner shown is operated boiling hot, with cleaner strength 4-5 oz. Na_20 per gallon. Work is made anodic and current density runs as high as 100 amp./sq.ft. The anodic connection makes necessary the cutting off of current when replating over a nickel surface; unless the current is cut off the nickel is badly oxidized and a blistered copper plate results. We had a difficult time tracing down the source of stray currents which caused oxidation, but found a solution in completely isolating the tank from any connection with the framework of the machine and completely breaking anode and cathode connections through a switch on each bus.

A considerable degree of success was attained using the single cleaner as shown, but we are better satisfied with the double cleaner as it is now. With the single cleaner, weekly dumping of the solution, daily suctioning to remove sludge off bottom and

Cold and Hot Blast Dryer
4½ Min
Spray Rinse
30 Secs
Rinse
19 Secs
Dragout
36 Secs
Anodic Electroclean
2½ Min
Spray Rinse
19 Secs
HCl Dip
30 Secs
Spray Rinse
19 Secs
Rochelle Copper
1½ Min
Spray Rinse
19 Secs
H2SO4 Dip
11 Secs
Spray Rinse
19 Secs
Bright Nickel 15 Min
Anodes
Anodes
LOAD
11'6"
8'1"
3'1"
3'9"
3'1"
5'3"
3'1"
2'10"
2'11"
14'6½"
56'

very close attention to foam removal, and prevention of foam carry-over to succeeding tanks was necessary. We still have to watch the foam removal, but there is much less now in the second tank. Total use of cleaner in the two tanks is less than it was in the single tank.

Tank No. 2 is a spray and dip rinse tank—work is sprayed as it enters the dip rinse and as it leaves. This tank is of plain steel as was No. 1.

Tank No. 3 is a rubber-lined steel hydrochloric acid dip tank. The acid is maintained at 14-16% HCl by weight. It is now dumped every two weeks, but will be filtered through carbon when a rubber-covered filter press arrives. The filtration will clean up the solution daily of any oily contamination from the two preceding tanks.

Tank No. 4 is a rubber-lined steel spray and dip rinse tank, operated the same as was Tank No. 2.

Tank No. 5 of plain steel contains a Rochelle Copper Bath. The cathode rail is divided into three sections, insulated from one another, so that plate can be applied for the full length of travel, or for one-third or two-thirds the distance. This feature gives a great deal of flexibility in the matter of copper thickness. We have found that the luster of Bright Nickel is dependent upon copper thickness as well as other variables.

There is a horizontal pipe running along the discharge end two inches below the surface, through which live steam is blown. In this way the solution is kept agitated at this end, which pushes back toward the other end any accumulation of scum. The scum is thereby kept from adhering to work as it leaves the tank.

It is important that the copper be kept free of soapy material. If cleaning and rinsing has not been thorough, there will be a drag in of fats and soaps into the copper, and soapy matter will then adhere to the work leaving the solution. If any of this soapy matter is on the work when it gets into the sulphuric acid dip, it will be hydrolyzed into free fat which does not rinse off. The free fat draws together into tiny globules on the work surface, and prevents deposition of nickel at these places.

Frequent filtration of the copper through carbon in an iron or rubber-lined iron press is advisable. A lead press should not be used as enough lead will dissolve to cause an undesirable copper plate.

The composition of a copper solution determines its appearance, and the appearance of copper influences the appearance of the Bright Nickel. Daily analysis is made of the main constituents, and sample steel panels are plated in the laboratory test set-up. This is a rectangular shaped miniature plating tank. An anode is located at one end and the steel panel is placed at an oblique angle at the other. For comparison purposes this angle is always the same. The appearance of the plate will vary from high to low current density areas along this panel, and by altering operating conditions and observing the effect of adding different materials to the bath, much useful knowledge can be gained in a short time. Bath constituents are kept within the following limits: Metallic copper 1.75-2.25 oz./gal., free cyanide 0.9-1.25 oz., Rochelle salts 8-10 oz., sodium carbonate below 8 oz., sodium hydroxide 1-2 oz./gal. Temperature 140°, pH 12.5-13.0.

Tank No. 6 is a steel spray and dip rinse tank operated in the same manner as No. 2.

Tank No. 7 is a rubber-lined steel sulphuric acid dip tank, maintained at 40% strength, by weight. We have found it necessary to keep this strength to neutralize alkaline film on the copper and secure good adherence of the nickel. Certain of our parts have to withstand severe forming operations after plating.

Filtration through carbon in a rubber-covered iron filter press is planned for this solution when we receive the press.

Tank No. 8 is a steel spray and dip rinse tank operated in the same manner as No. 2.

The big nickel tank is next. It is of rubber-lined steel, of 4,000 gallons capacity, built in three sections bolted together in the form of the letter "J." It contains 11,000 lbs. of nickel anodes.

The most severe problem encountered in this tank was laminated or double nickel. A considerable money loss was involved in reworking parts on which the nickel plate was separated by the severe stresses involved in chromium plating. Many things were blamed, including jumpy operation of the conveyor chain, the 180 degree bend which brought the work on the inside lane closer together than on the outside, the plating racks, and manner of addition of brightener. We finally "licked it" by brazing together parts of the work carrier arms which had been only bolted, placing a spring contact against the cathode rail in addition to the gravity

bearing of the work carrier, and making spring pressure contacts on the plating racks.

The rubber lining caused a great deal of trouble in the first month. Accelerator compounds in the rubber leached into the solution, causing a severe type of pitting known as "orange peel" on high current density points. Several treatments with activated carbon were required to clear up the solution and in addition the plating tank was boiled out one week-end with water at 180° containing a small amount of non-pitter.

We encountered chromium contamination once. Although only 0.003% was present, the nickel had a hazy, smoky tone. To remove the chromium, slightly less than 1 lb. ferrous sulphate per 100 gallons of solution was added; after a few hours, nickel carbonate was used to raise the pH to 4.8, and the solution kept at 160° several hours; then the solution was filtered through filter aid, acidified with sulphuric acid to pH 2.9, and filtered through activated carbon packed on filter aid.

Recently current relationships between anodes, work being plated, and the lead coil, became so shifted that our lead coil was literally "burning up" both non-pitter and brightener. It was anodic and caused a highly oxidizing condition at its surface. Completely insulating the tank, completely insulating the coils, and grounding the supporting framework of the machine did no good. Apparently stray currents were going through the solution to the coil. Only when the coil was hooked to the cathode through a resistance, and 1 volt applied, did we overcome the tendency for the coil to be anodic. To avoid future coil difficulties we may install a heat exchanger outside the tank. This will remove all lead surfaces out of the solution.

The nickel solution is not as difficult to maintain in proper balance, under normal conditions, as the copper. It is so large that changes in the main consitutents take place relatively slowly. The brightener, anti-pitting agent, and sulphuric acid must be added every day at frequent intervals. Daily analyses are made for brightener and anti-pitter, and pH is measured twice daily on a glass electrode pH meter. Steel panels are plated frequently in the laboratory cell to determine effect of different additions. Weekly analyses are made of nickel sulphate, nickel chloride and boric acid. Anode corrosion is sufficient to maintain nickel metal content. Nickel chloride and boric acid are added when needed,

usually during the week-end shutdown period. Nickel sulfate at 45-50 oz./gal., nickel chloride 7-8 oz./gal., boric acid 5-5.5 oz./gal. are the common constituents. Actual concentrations of the organic ingredients is extremely low.

Solution is filtered weekly through filter-aid into the storage tank. Anodes are added and the tank bottom thoroughly cleaned. When necessary, to clear up contamination, carbon is added on top of the filter-aid and the solution filtered through the carbon. The press in use is a lead plate and frame type of 1500 gallons per hour capacity.

Besides this press we use a lead press of 900 gallons per hour capacity on cleaner solution and will soon have a 600-gallon rubber-covered press for the acids and the copper.

An ampere-hour meter is hooked into the nickel tank circuit and gives a check on consumption of nickel anodes, brightener, anti-pitter and other materials in relation to current consumption.

Tank No. 10 is a rubber-lined, steel dragout tank, maintained at pH under 4.5, to avoid precipitation of anti-pitter. Daily make-up for the nickel tank is taken from it. It saves in a year several hundred gallons of valuable solution which otherwise would go down the sewer.

Tanks No. 11 and No. 12 are steel water rinse tanks. A spray in tank No. 12 is directed against the contacts between work rack and carrier, to insure clean surfaces.

Number Thirteen in the line is a very efficient dryer which first directs a blast of cold air from all angles at the work, then later blows hot air to dry out water in crevices.

Based on a 15-minute nickel plate, the timing in the line is:

1.	Cleaner	2½ minutes
2.	Spray Rinse	19 seconds
3.	Hydrochloric dip	38 seconds
4.	Spray Rinse	19 seconds
5.	Copper	1¾ minutes
	when all sections of cathode rail are used. Can be 1/3 or 2/3 of this time by opening switches.	
6.	Spray rinse	19 seconds
7.	Sulphuric dip	11 seconds
8.	Spray rinse	13 seconds
9.	Nickel plate	15 minutes
10.	Drag out	56 seconds
11.	Dip rinse	19 seconds
12.	Dip rinse	38 seconds
13.	Dryer	4½ minutes

Speed of main drive chain 27" per minute.

Transfer time from pickup to set-down 14 seconds. Time for complete circuit 28 minutes. Output 180 work racks per hour.

The generator is an interpole winding, separately excited, 6-12 volt machine of 6,000 ampere capacity. The main poles are separately excited. The interpoles are in series with the commutator. The effect obtained is similar to but not quite that of a compound wound machine.

From the plating machine as described small steel stampings are deracked and reracked for chrome plating. Tops and soleplates are buffed on automatic equipment before chrome plating. Our finish standards are so high that we must buff to flow out polish marks which show through. We must polish to eliminate folds in the metal which result from drawing the difficult shapes of the new tops. The Bright Nickel is very easily buffed, whereas it is very difficult to get a high enough luster on the steel, and cast iron to be suitable for a Bright Nickel plate which would not require buffing before chromium plating.

WE OVERLOOKED LEROY BEAVER

In naming some of the members of Philadelphia Branch in last month's REVIEW, we forgot to mention our good friend Leroy Beaver. Mr. Beaver belongs to all the branches. He is one of the most sought-after speakers in the A.E.S. His talks on barrel burnishing and barrel plating are familiar to every plater in the country. In addition to this, he is a real booster for the A.E.S.

Pardon the omission, Leroy. We appreciate your efforts very highly.

NEWS FROM THE HOT NOSE REPORTER

The Wilsons in the Detroit Branch break into the news this month. The red-headed one is a grandfather although he is trying to keep it under his hat along with the rest of his hair (what there is left), and the other is raising a new secretary for the branch in 1970.

Professor Gertz may be a professor in Houghton, but in Detroit he is just one of the boys.

Rumor has it that Malcom Phillips, son of famed Bill Phillips, will middle aisle it with Miss Jane Gillespie, daughter of the Paul Amundsens. No definite date has been announced for the wedding but it is believed that the splicing will take place on June 29.

Fred May, pride of Toledo, has expressed his dislike of several cracks made in this column about his golf game. Well, this column does not like his golf game, and that should make everything about even.

Carl Heussner is running about chipper as ever, and seems to have fully recovered from his operation for high blood pressure, inside anodes, or something.

It was announced that there would be four speakers for June 7th meeting. Evidently President Pinner is getting short winded when Professor Baker, Vice-president Fritts, and W. M. Phillips have to help him out. Or is this a "free-for-all" with the best man the winner?

We wonder why Red Wilson took his movies to other branches before showing them in Detroit. He wouldn't be afraid of any ragging, or would he?

"PROGRAM FOR 1940 CONVENTION"

MR. C. C. CONLEY
General Chairman

SUNDAY JUNE 9

3:00 P.M. Registration
Ballroom Floor, Hotel Biltmore.
Registration fee: Men—$5.00, Ladies—$5.00.
This entitles registrant to book of tickets to be used for all functions and activities. Membership in Society is not necessary for registration.

MONDAY MORNING—JUNE 10

8:00 A.M. Registration, Ballroom Floor, Biltmore Hotel
9:00 A.M. Welcome to delegates, members and visitors
Charles C. Conley, General Chairman
Address
E. W. Cochran, President, Dayton Branch
Welcome to Dayton
The Honorable Mayor Charles C. Brennan
Presidential Address
R. M. Goodsell, President of American Electroplaters' Society
Business Session
Presentation of Credentials
General Reports

EDUCATIONAL PROGRAM

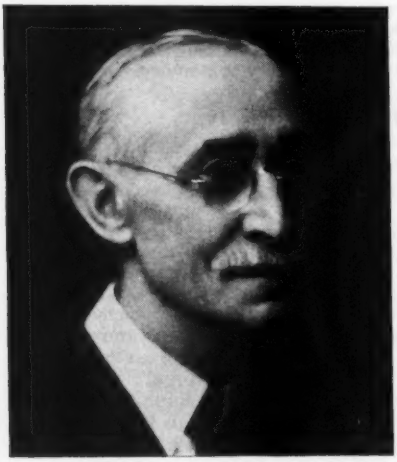
Arranged by the Educational Committee, H. C. Leuchauer, Chairman

FIRST SESSION—MONDAY AFTERNOON JUNE 10—2:00 P.M.
Biltmore Hotel Ballroom
VICTOR MINER, Toledo Branch, Presiding

1. "Metallurgical Aspects of Hydrogen in Electroplating." *Carl A. Zapffe*, Research Associate, and *C. L. Faust*, Research Engineer, Battelle Memorial Institute, Columbus, Ohio.

MRS. C. C. CONLEY
Co-chairlady of Ladies' Reception Committee

MRS. E. W. COCHRAN
Co-chairlady of Ladies' Reception Committee



WALTER FRAINE
Advisory
Grand Old Man of Dayton Branch
Past Supreme President of the A. E. S.

W. J. WISE
Chairman Publicity Committee

2. "Notes on the Spot Test for Thickness of Chromium Coatings. *Dr. Wm. Blum* and *W. A. Olson*, National Bureau of Standards.
3. "Magnesium as a Control Agent for Zinc Anodes." *R. C. Hull*, du Pont Electroplating Division, Experimental Laboratory, Cleveland, Ohio.
4. "Patents in the Plating Industry." *Col. W. A. Toulmin, Jr.*, Toulmin & Toulmin, Attorneys, Dayton, Ohio.

MONDAY EVENING—JUNE 10—8:30 P.M.

International Fellowship Club—Open House Ballroom, Biltmore Hotel.

This evening's entertainment is sponsored by the International Fellowship Club.

A ticket for this affair is included in your registration booklet.

Dancing, refreshments, music by Michael Hauer and his Orchestra

SECOND SESSION—TUESDAY MORNING, JUNE 11—8:45 A.M

LEROY CRITCHFIELD, Lancaster Branch, Presiding

1. "The Trends of Electroplating." *George B. Hogaboom*, Hanson-Van Winkle-Munning Co., Matawan, New Jersey.
2. "Disposal of Plating Room Wastes." *T. J. Fagden*, Process Engineer, Ternstedt Trenton Division, General Motors Corporation, Trenton, New Jersey.
3. "Treatment of Steel Prior to Organic Paint Finish." *S. J. Colvin*, Parker Rust-Proof Co., Detroit, Michigan.
4. "Magnesium Copper Sulphide Rectoplaters as a Source of Direct Current Power for Electroplating." *C. A. Kotterman*, and *W. Binai*, P. R. Mallory & Company, Indianapolis, Indiana.

TUESDAY AFTERNOON—JUNE 11

1:00 P.M. Trip through the National Cash Register Company. (Buses leave Biltmore Hotel at 1 P.M.)

3:30 P.M. Trip through the Frigidaire Division of General Motors. (Buses leave National Cash Register Company at 3:30 P.M.)

The National Cash Register Company has earned for itself an enviable record in industry, not only in the United States but throughout the world.

The National Cash Register Company was the founder of the basic principles employed in present-day salesmanship regardless of the type of business. The fundamental methods of sales technique developed many years ago are still being successfully employed at the National Cash Register Company as well as by other companies who have adopted the National Cash Register System.

The National Cash Register Company is located on 27 acres of land, part of which was a section of the Patterson Farm. There are 25 buildings, the majority of which are connected by tunnels or bridges or both. There are 60 acres of floor space over which 6300 employees carry out their daily work. Four-fifths of the factory wall space is glass, affording excellent working conditions for the employees.

At the Frigidaire Division you will see one of the largest one-story factory buildings in the world. The main building being just short of one mile in length. The Frigidaire Division in its two plants in Dayton employ 13,000 people, turn out 2800 refrigerators daily.

Points of interest here are: some of the largest automatic tin plating units in this country; hard chrome plating of compressor parts; automatic pickling of refrigerator cabinets; bonderizing; porcelain enameling; anodic treatment of aluminum.

THIRD SESSION—TUESDAY EVENING, JUNE 11—8:00 P.M.

GEORGE WAGNER, Newark Branch, Presiding

1. "Chemical Evaluation and Control in Metal Cleaning." *Jay C. Harris*, Thomas & Hochwalt Laboratories Division, Monsanto Chemical, Dayton, Ohio.

G. LEWIS SMITH
Chairman Exhibits Committee

C. W. POWELL
Chairman Program Committee and Secretary Dayton Branch

2. "Effect of Cleaning Technique on Adhesion of Electroplates." *B. F. Lewis*, Northwest Chemical Co., Detroit, Michigan.
3. "Absorption of Copper in Zinc Base Die Castings." *F. F. Oplinger*, du Pont Electroplating Division, Niagara Falls Laboratory.
4. "Pickling of Metals for Electroplating." *Owen T. Towner*, Cincinnati Branch, Superintendent of Finishing, Auto Sun Products Co., Cincinnati, Ohio.

FOURTH SESSION—WEDNESDAY MORNING, JUNE 12—8:45 A.M.

PHILIP J. RITZENTHALER, Milwaukee Branch, Presiding

1. "The Effect of Cathodic Film Motion on Electrodeposits." *W. M. Phillips* Head Electro-Chemistry Department, Research Laboratories Division, General Motors Corporation, Detroit, Michigan.
2. "A New Method for Studying Cathode Films." *A. Brenner*, National Bureau of Standards.
3. "Plating Silver at Very High Current Densities." *A. C. Simon* and *J. T. Lumley*. National Bureau of Standards.
4. "Plating Shop Economics." *Dr. M. M. Beckwith*, The J. B. Ford Sales Co., Wyandotte, Michigan.

OFFICIAL PROGRAM

Picnic and outing, courtesy of *The F. B. Stevens Co.*

WEDNESDAY AFTERNOON—JUNE 12

11:00 A.M. Buses leave Hotel Biltmore for Springfield, Ohio.
Visit to Mitchell Engineering Company Branch of F. B. Stevens Company for inspection of latest type automatic plating equipment in operation.
Buses leave Mitchell Engineering Plant for Springfield Country Club.

Luncheon Refreshments
East and West Ball Game
Golf Tournament Swimming
Dancing
Tickets for these affairs are included in your registration booklet.

6:00 P.M. Final bus leaves Country Club for Dayton.

FIFTH SESSION—WEDNESDAY EVENING, JUNE 12—8:00 P. M.

STANLEY HEDDEN, Pittsburgh Branch, Presiding.

1. "The Cathodic Treatment of Copper in Solutions of Beryllium Sulphates to Prevent Tarnish. *Dr. D. T. Ewing* and *George Jernstedt*, Michigan State College.
2. "Study of Sodium Stannate Tin Plating Solutions." *Fred Bauch*, Frigidaire Division of General Motors, Dayton, Ohio.
3. "Lead Plating in Lead Acetate Baths." *Dr. F. C. Mather* and *J. Schwartzkopf*, Indiana University, Bloomington, Indiana.
4. "Studies in Bright Nickel Plating Processes." *Dr. C. B. F. Young*, Electrometallurgist, Columbia University, New York, New York.

SIXTH SESSION—THURSDAY MORNING, JUNE 13—9:00 A.M.

ROBERT KNOEPFLER, Cincinnati Branch, Presiding.

1. "A Short Research on the Effect of Basis Metal Polishing on the Character of Nickel Plate." *Walter L. Pinner*, General Spring Bumper Division, Houdaille-Hershey Corporation, Detroit, Michigan.
2. "The Relative Effect of Various Polishing Finishes on Corrosion Resistance of Electroplated Nickel Deposits on Steel. By the *Toledo Branch*.
3. "Hard Plating of Plastic Molds." *Arthur W. Logozzo*, Pittsfield, Massachusetts, Foreman Plater of the Plastics Division, General Electric Company, Pittsfield, Massachusetts.
4. "New Equipment for Treating Parts in Bulk." *Gustaf Soderberg*, The Udylite Corporation, Detroit, Michigan.

THURSDAY AFTERNOON—JUNE 13

1:30 P.M. Final Business Session.
Fourth Floor (small ballroom).
Election of Officers.
Selection of 1941 Convention City.

THURSDAY EVENING—JUNE 13

7:30 P.M. Banquet and Dance.
Ballroom, Biltmore Hotel.
Entertainment.

LADIES PROGRAM

SUNDAY—JUNE 9

3 P.M. Registration.

MONDAY—JUNE 10

8 A.M. Registration.
9 A.M. Attend Opening of Convention with Men.
1:30 P.M. Bridge Luncheon with Fashion Show at Rike Kumler Company.
8:30 P.M. International Fellowship Club Party in Biltmore Hotel Ball Room.

TUESDAY—JUNE 11

9:30 A.M. Breakfast and Gift Presentation, in Kittyhawk Room, Biltmore Hotel.
2 P.M. Tour through the National Cash Register Co. (Buses leave Biltmore Hotel at 2 P. M.) Organ Recital.
Evening Open

WEDNESDAY—JUNE 12

Noon Luncheon, Bingo Party, Swimming and Golf at Springfield Country Club. (Buses leave Biltmore Hotel at 10:30 A.M.)

8 P.M. Aunt Ella's Party and Special Entertainment at Biltmore Hotel.

THURSDAY—JUNE 13

10 A.M. Tour through Dayton Art Institute. (Buses leave Biltmore Hotel at 10 A. M.)

Afternoon Open

7:30 P.M. Annual Banquet, Entertainment, and Dancing, in Biltmore Hotel Ballroom.

Convention Committees

Publicity:
Charles Herby
Paul Gessler
John Albaugh

Program:
Bertram Fromm,
Russell T. Holland
Clyde Morgan

Banquet and Entertainment:
Robert Vandevander
Tom Cusick
Robert Van Derau

Educational:
Ohmer Stephens
John King
Charles W. Abbott

Exhibit:
Ward Protsman
Walter Zang
Harold Farber

Registration:
Joseph Zang
William Neill
Lester Stolle

Recreation:
Jacob Zwisler
Forrest Valenttine
Frank Bosch

Plant Visitation:
Ralph Stolle
R. G. Suman
Ralph King

Hotel Reservations:
A. Fisher
Chester Lancaster
W. A. Hopkins

Transportation:
V. Garrison
F. Zemter
K. Harrison

Advisory:
H. J. Harter
George Speakman

THE HOT NOSE REPORTER'S COMMENTS

The Hot Nose Reporter would like to have a map similar to the one furnished Dr. Blum. It seems Dr. Blum's map shows that in going from Washington to to Detroit, the route includes Los Angeles and San Francisco.

Things which the reporter never expected to happen:

Phil Brockway takes a front row seat at the April meeting.
Red Wilson does not ask the speaker a question.
Bill Phillips arrives almost on time!
Spring just around the corner.

Perhaps Spring will be here soon; anyhow the Reporter is getting Spring fever, as the items are getting less and less.

Divine Brothers Company of Utica, N. Y., has recently introduced to the market the type VCS Polishing and Buffing Lathe. This lathe, available in 3, 5, and 7½ h.p., has self-aligning bearings, quick easy belt adjustment, bearings pressure-lubricated, enclosed motor, NEMA standard ball bearings, and is supplied with handy tray to hold composition and small tools.

Dayton Convention Fellowship Program

BY TOM TROMBOUR, Secretary

INTERNATIONAL FELLOWSHIP CLUB

"Wing your way to Dayton" is the slogan of the committee of the 1940 convention of the American Electroplaters' Society to be held at Hotel Biltmore, Dayton, Ohio, June 10 to 13.

Advance information indicates that the educational sessions and entertainment features will be of the same high caliber as previous annual conventions.

The Fellowship Club will play an important part in entertaining the registrants. Our Annual Luncheon will be held Monday noon, June 10, in the Biltmore Room, Mezzanine Floor. The Dayton Committee has advanced the opening educational meeting to 2:00 o'clock which will allow us ample time to hold our annual meeting and adjourn in time for the educational program.

The order of business: Lunch, election of officers and discussion of arrangements for Open House.

Menu for $1.00 Luncheon
Relish
Assorted Cold Meats and Cheese
Baked Beans and Salt Pork — Potato Salad
White and Rye Bread and Butter
Dessert - Coffee - Refreshments

Since our Annual Meeting offers an opportunity for all suppliers and their representatives to meet in a friendly atmosphere we would appreciate a one-hundred per cent attendance at this gathering.

Open House—Monday evening, June 10—Large and Small Ballroom, Fourth Floor.

The purpose of Open House, held on the first night of the convention, is to offer an opportunity for all registrants to become acquainted as well as to create good will in the plating and finishing industry. This outstanding entertainment feature of the convention is provided by the liberal contributions of firms selling to the industry. These firms and their representatives invite you to attend. A program, including list of contributors will be distributed to registrants.

Open House Program

Music by Michael Hauer and his Orchestra
Grand opening 8:30 — Music, dancing and refreshments
Buffet Lunch 10:15 until closing

MENU

Olives, Radishes, Dill Pickles
Assorted Cold Meats
Spaghetti with Meat Balls
Potato Salad
Rye and White Bread, Butter
Assorted Pies — Coffee

Ladies' Party — Wednesday, June 12

This party is one of the outstanding features of the Ladies' Program. Mrs. Charles Conley has advised that arrangements have been completed with the Springfield Country Club for holding the party which is under the auspices of the Fellowship Club in cooperation with the Ladies' Committee of the Dayton Branch. Mrs. Joan Trumbour Wiarda will represent our club.

Golf Tournament

Wednesday afternoon, June 12, at the Springfield Country Club. Arrangements have not yet been completed. For particulars, see convention program, but be sure to come prepared to enter.

In concluding may I take this opportunity on behalf of our contributors and their representatives to extend to all who expect to attend the convention, a cordial invitation to enjoy Fellowship features of the Convention Program.

REFINING PRECIOUS METAL WASTES

A book entitled "Refining Precious Metal Wastes" by C. M. Hoke, has recently been published and may be purchased from Metallurgical Publishing Company, 123 William St., New York.

The first part of the book tells the beginner exactly how to refine his own materials, tells what equipment is needed and how to handle it. The reader who follows these instructions step by step, will not only recover his precious metals in pure form, but will also understand the reasons for each step in the procedure.

The economic aspects are constantly kept in view. The reader will know which materials he may profitably refine in his own shop, which to sell, and which, if any, to throw away.

The language is clear, non-technical, and easy to read.

The latter part of the book is for the experienced worker, and concludes with a masterly discussion of the processes used by the large professional refineries, with detailed descriptions of their equipment and routines.

The Appendix, lists of books, dealers, laws and regulations, sources of information and Index, are valuable to all.

Whether you are a veteran refiner or an absolute beginner, this book gives you the facts and advice that you need, all expressed in the clearest, simplest language you ever read, with no long words, no chemical symbols.

This book should be in every shop where refining of previous metals is carried on, whether on a large or small scale. Price is $5.25 including mail charges.

REPORT OF TRIP OF W. BLUM TO CALIFORNIA IN MARCH AND APRIL

I. Addresses

The principal occasion for this trip was the request of the Pacific Coast Branches of the American Electroplaters' Society for reports on the research work conducted in recent years. Three addresses were given to the Los Angeles Branch and two to the San Francisco Branch. These meetings were well attended and much interest was shown.

At both of these Branches, inquiries were made regarding the extension of any future exposure tests to include one or more locations on the Pacific Coast, in order that platers and manufacturers there may observe the results directly. This subject will be presented to the Research Committee for consideration.

Mrs. Blum and I are greatly indebted for the generous hospitality shown to us throughout this trip, and especially in California, where every day of our trip was made interesting and profitable. The banquet of the Los Angeles Branch was very enjoyable.

In addition to the above talks, addresses, chiefly on specifications, were given to the Grand Rapids and Detroit Branches of the American Electroplaters' Society; to the New Orleans and Salt Lake City Sections of the American Chemical Society; and to the Denver Section of the American Society of Mechanical Engineers. In all, ten lectures were given on this trip. It is hoped that the talks to chemists and engineers will assist them to use and specify plated coatings for appropriate purposes.

II. Industrial Plants

Visits were made to nineteen factories. Among the plating plants visited were those of the Douglas Aircraft Co., Santa Monica; General Electric Co., Ontario, Calif., W. B. Jarvis Co. and Wolverine Brass Co., Grand Rapids, and the Chevrolet Company laboratories at Detroit. Other plants related to plating were the G. Dietz Co. and the Pancro Company in Glendale, where reflectors for landing lights are first plated, and then coated with evaporated films of an aluminum-magnesium alloy.

A number of plants were visited where corrosion problems are involved and where there may be applications for plated coatings. Among these were the Freeport Sulphur Works at Port Sulphur, La.; the Atlantic Refining Co. oil wells at Longview, Texas; the cellite mines of Johns-Manville, Lompoc, Calif., where "filter-aid" is produced; the mines and concentrating mills of the Utah Copper Company at Bingham, Utah; the Garfield Copper Smelter and Murray Lead Smelter at the American Smelting and Refining Co., and the lead smelter of the U. S. Smelting and Refining Co., where cadmium is recovered and electrolytically refined.

III. Visits to Government and Educational Institutions

At the Naval Air Station at San Diego, cadmium and chromium plating and anodizing of aluminum and magnesium alloys are applied. A visit was also made to the War Department Arsenal at Ogden, Utah.

At La Jolla, Calif., the A.S.T.M. exposure racks and tests, principally of nonferrous metals (but with no plated coatings) were observed. Corrosion is very severe there, possibly because of the dense fogs.

Visits were made to Tulane University, New Orleans; University of California, Berkeley; and University of Utah, Salt Lake City, where research problems were discussed.

It is believed that such trips as this one and those made in recent years by other A.E.S. representatives to the Pacific Coast will increase interest here and thus further the aims of the A.E.S. About half of the expense of this trip was paid by the branches visited, and the rest from the A.E.S. treasury.

WING YOUR WAY TO DAYTON, THE BIRTHPLACE OF AVIATION

Here and There

SAN FRANCISCO BRANCH

Mr. L. W. Miller, secretary of San Francisco Branch, writes; "We enjoyed Dr. Blum's visit with us very much. He told us some very interesting things about the work being done at the Bureau of Standards. Everyone was very much interested in the exposure tests samples that he showed. We were sorry that he couldn't be with us longer.

LOS ANGELES BRANCH

We are pleased to publish in this issue of the REVIEW some of the papers read at the annual meeting of Los Angeles Branch, held at the Roosevelt Hotel on Saturday, March 30. We are indebted to Mr. Ernest Lamoureux for sending us these papers for publication.

MR. ERNEST LAMOUREUX

Dr. Blum, who was also one of the speakers, told us some things about the meeting which convinces us that this year's program was one of the best ever. In addition to the fine educational program presented, Mr. Lamoureux and his committee saw to it that the social side was not neglected. There were plant visitations, luncheons, automobile trips and a banquet.

Past Supreme Presidents Frank J. Hanlon, and Oscar Servis were vacationing in Los Angeles and so, with Mrs. Hanlon and Mrs. Servis, were able to enjoy the various meetings and outings. Mrs. Blum accompanied the Doctor and had an enjoyable time also.

We wish we had more space to laud the fine work done by the Committee, reports received from those in attendance prove that the efforts of those responsible for these meetings were well worth while.

Mr. Rinker's Paper at the Boston Meeting

Mr. Ed Rinker who spoke at the annual meeting of Boston Branch on "Cleaning before Electroplating," is connected with Oakite Products, Inc., New York City. We forgot to mention Mr. Rinker's connection in reporting the above meeting.

Baltimore-Washington Branch meeting was held on Saturday, May 4, at the Bureau of Standards, President Lindell Turner presiding.

The first business was the election of officers and delegates to the convention: President, Irvin H. Hahn; vice-president, Curtis C. Beethan; secretary, Carrol T. Thomas; librarian, Abner Brenner; board of managers, the past presidents; delegates to the Convention, T. F. Slattery, A. G. Peridon, Wilbur Ermlich; alternates, H. M. Lyon, C. C. Beethan, A. D. Fewell.

Mr. M. R. Thomas, National Bureau of Standards was the speaker. Subject: "Plating from Alkaline Solutions."

At the conclusion of Mr. Thompson's most interesting address, the new librarian, Mr. Brenner, invited Dr. Blum to tell us something about his recent trip to Los Angeles and San Francisco. Dr. Blum spoke briefly of all the high lights of his visit, stating that he had a grand time, that everywhere he and Mrs. Blum went they got a good reception. Large audiences listened attentively to the messages given regarding the research work and other phases of the Society's activities.

Summary of Educational Activities

As has been the practice for the past few years, monthly open educational meetings were held by the New Haven Branch of the A.E.S. during the year 1939. These meetings, held in one of the large lecture halls of the Sterling Chemistry Laboratory of Yale University, where there are fine facilities for demonstrations, blackboard work, lantern slides, etc., proved to be very popular, and were very well attended. The New Haven Branch was very fortunate in having some excellent speakers for these sessions. Following the lectures themselves, were some very interesting discussions in which every one could take part.

Listed below are the speakers, their subjects, and a few relative remarks:

October, 1939; Mr. A. B. Wilson, Metallurgical engineer, Chevrolet Gear and Axle Co., past president of the A.E.S. and well-known authority on Electroplating;
Subject: "Illustrated Talk on the Manufacture of Bumpers Anodes." Mr. Wilson reviewed in detail the many interesting problems attendant on large scale electroplating.

November, 1939; Mr. J. D. Tierney, Storts Welding Co., Meriden, Conn.
Subject: "Some Influences Affecting the Use of Spray Rinsing." Mr. Tierney clearly depicted the functions and methods of cleaning with the use of spray rinse, and also the operation of the air suction agitator. Following the lecture the entire group adjourned to the industrial laboratory, where the operation of some of these tanks was illustrated.

January, 1940; Mr. S. Tour, Lucius Pitkin, Inc., New York
Subject: "The Electropolishing of Metals." Mr. Tour gave a fine talk on the anodic treatment of various metals. He had some very interesting samples, and explained the mechanics of this new process very thoroughly.

February, 1940; Mr. S. L. Lopata; Duriron Co., Inc., Dayton, Ohio.
Subject: "Practical Aspects of the External Heating and Filtration of Electroplating Solutions." He gave an excellent description of the methods of heating plating solutions, and accompanied his talk with some fine illustrated slides.

March, 1940; Mr. H. A. Grove, Republic Steel Corp, Massillon, Ohio.
Subject: "Rolling and Finishing of Sheet and Strip Stainless Steel." This talk was illustrated with slides of different type mills, pickling and polishing equipment, together with some samples of finished articles.

April, 1940; Mr. G. F. Geiger, Development and Research Division of International Nickel Co.

Subject: "Characteristics of Electrodeposited Nickel." This talk dealt with the structure of nickel deposits, as compared with the rolled nickel. The effect of the structure of the basis metal on the deposit, the effect of heat treatment of the deposit, information on the deposits from the various nickel solutions, and information on heavy nickel deposits.

May 1940; Dr. W. Blum, National Bureau of Standards, Washington, D. C.

Subject: "Specification of Electroplated Coatings." Dr. Blum gave the results obtained in the exposure tests of electroplated coatings of nickel, chromium, zinc, and cadmium on steel, brass, and zinc base die-castings, conducted by the National Bureau of Standards in cooperation with the A.E.S. and the American Society for Testing Materials. These results were illustrated by specimens and slides. Chemical and Magnetic methods of measuring the thickness of deposit were described and illustrated. Specifications for thickness of deposit were also discussed.

In addition to the above activity the New Haven Branch had a course in metallurgy, which consisted of a series of fourteen lectures, held bi-monthly at the Sterling Chemical Laboratory. This course included lectures which were profusely illustrated with movies, lantern slides, experiments, and also included a plant visitation. The course was open to anyone interested, and many men indirectly connected with this type of work, namely purchasing agents, cost and production men, as well as the platers themselves signed up for this course. The course proved to be of exceptional value to the electroplaters, inasmuch as only too often the electroplater is held responsible for defects in finished goods, when many times the fault may be traced to some flow in the base metal.

The course was conducted by Mr. L. W. Thelin, metallurgist of Chase Brass & Copper Co., Waterbury, Conn. In addition to Mr. Thelin, there were several other lecturers who took over the discussion of certain divisions of the course with which they were particularly familiar. These included Dr. W. I. Mudge, International Nickel Co.; Mr. B. McGar, Chase Brass & Copper Co.; and Mr. H. Keshan, Steel Metallurgist, Chase Brass & Copper Co.

An outline of each lecture was given each member, should he wish to refer to it at some future date. The subjects of the lectures were as follows:

I. Introduction
  Part 1—Ore Metallurgy
    a. Iron & Steel
    b. Copper
  Part 2—Metals & Alloys
    a. Fundamental Consideration
    b. Microscopy
II. Alloy Systems
    a. Constitution Diagrams
    b. Characteristics
III. Properties of Metal
    a. Chemical Testing
    b. Physical Testing
IV. Casting Shop Practice
V. Rolling Mill Practice
VI. Grain Growth and Recrystallization
VII. Tube Mill Practice
VIII. Copper and Copper Alloys
IX. Finishing Brass and Copper Alloys
X. Nickel and Nickel Alloys
XI. Iron and Steel Alloys
XII. Aluminum Alloys
XIII. Fabricating Brass Alloys

XIV. New Developments in Non-Ferrous Metallurgy

The course in metallurgy will conclude with a stag banquet held on Saturday evening, June 1.

These two separate programs rounded out a very successful and busy year for the New Haven Branch, as far as educational work is concerned.

JOSEPH SULLIVAN, *Librarian*

THE WATERBURY MEETING

The second regional meeting of the New England Branches, Bridgeport, Hartford, New Haven, Springfield, and Waterbury, was held at the Hotel Elton, Waterbury, April 27. There was an attendance of approximately 200 at the afternoon session, three hundred and ten sat down to the banquet in the evening.

The speakers were Thomas H. Chamberlain, Chase Brass & Copper Co., subject "Finishing of Copper Alloys"; Austin B. Wilson, Chevrolet Motor Corp., Detroit, and chairman of the Research Committee of the A.E.S., Bumper and Anode Manufacture for the Chevrolet; Clarence Van Derau, Works Manager, Westinghouse, Electric & Mfg. Co., Mansfield, Ohio, who spoke on "The Advantages of A.E.S. Membership to the Plater."

Ellsworth Candee, president of Waterbury Branch, was general chairman and Henry Creamer, president of New Haven Branch, had charge of the educational session.

John Costigan, president of Springfield Branch, had charge of the evening program. The ladies were well provided for by Mrs. Louis Lougee of Waterbury, assisted by Mrs. Leather, Mrs. Candee, Mrs. Ehrencrona, and Mrs. McConas.

In addition to Chairman Candee, several other men worked exceptionally hard for the success of the meeting, among them, Bill Ehrencrona in charge of advertising and program, ably assisted by Dr. Walter Meyer, and John Costigan who did a grand piece of work as publicity chairman. Jack's novel ideas were highly spoken of. Every plater within five hundred miles must have known about the meeting it was so well advertised.

John Tierney of Storts Welding Co. gave valuable assistance in this connection also by publishing the details in his valuable trade paper. Apley Austin of Hartford Branch was treasurer. Joel Backus and Vernon Grant had charge of tickets.

Boston Branch was well represented. Arthur Mintie, Andrew Garrett, Joe Barron, Charlie Hardy, Ed Delorm, Arthur Collins, E. Burke and others coming from the Hub. Let's all get together next year boys, including Boston and Providence.

Newark, Philadelphia, and New York members were also conspicuous. Vice President Fulforth and Mrs. Fulforth drove from the Quaker City along with Leroy Beaver.

Mr. E. A. Anderson of New Jersey Zinc Co. who is well known to our members as a speaker at many branch meetings, was asked to act in that capacity at the Educational Session, which he did. One of the many things we like about Mr. Anderson is his willingness to cooperate. He also lends quiet dignity to a n event of this kind which makes him popular wherever he addresses a gathering of platers.

The Educational Committee invited past supreme president of the A.E.S. Clarence Van Derau, Works Manager of the Westinghouse Co., Mansfield, Ohio, to be one of the speakers. Mr. Van Derau was a two-term president during the depression years 1933-'34 and piloted the Society safely through this period. It was a great pleasure to have him with us again. He was accompanied by Mrs. Van Derau. Thanks, Van, for your presence and your helpful advice to present and future members of the A.E.S.

Mr. Charles Conley of Dayton, Ohio, was also in attendance, boosting the convention. Charlie strongly urged a large attendance from the New England Branches.

Bert Daw, president of Lasalco, St. Louis, was one of the visitors.

The small table lamps given to each lady present, were much appreciated. Very favorable comments were heard regarding these reminders of an exceptionally pleasant event.

Earle Couch and Ralph Colter had charge of the hotel arrangements. Favorable comments were frequently heard regarding the meal. If these events continue to grow we will have to seek larger quarters. The Elton's seating capacity was taxed by the time everyone was served.

We take this opportunity of thanking all these who had any part in the success of the meeting. We hope to meet you all again next year when we plan to have a bigger and better educational and social program for the enjoyment of all.

The annual Convention at Dayton June 10-13, 1940. Headquarters: The Dayton-Biltmore Hotel.

Milwaukee Branch, A.E.S., Holds Annual Educational Session

On Saturday, April 6, Milwaukee Branch, A.E.S., held its Second Annual Educational Session and Banquet at the Schroeder Hotel. The largest crowd ever to attend an annual meeting in Milwaukee, about two hundred people, were present to hear papers by Walter Pinner, George Hogaboom, Gustaf Soderberg, and Al Hermansen.

President Jack Geissman opened the meeting and introduced our National President Ray Goodsell. Ray welcomed the crowd and reported that Bill Kennedy, executive secretary, who recently had a bad nasal hemorrhage, was much improved. Charles Connelly, energetic chairman of the A.E.S. National Convention at Dayton, urged all present to attend the convention in June. He announced that preprints of all the papers would be distributed at the start of the convention. This would give everyone time to plan a more complete discussion than under the old system. Several times the volume of discussion is expected.

Mr. Pinner, of General Spring Bumper Co., presented some original work on "Current Distribution in a Nickel Plating Solutions." The importance of anode placement in current distribution was demonstrated and actual thickness measurements made. Of equal importance was the position of the work being plated. Irregularly shaped articles were placed in several positions relative to the anodes and thickness measurements made. Results showed strikingly that curved surfaces plated more uniformly than flat, and that shading of pieces may be very bad under certain conditions. The importance of actual thickness measurements on the piece involved was strongly emphasized, as results are often unpredictable. Mr. Pinner also spoke briefly on the Rotap method of determining polishing grain size. Data were presented to show effect of abrasive grain size on final finish, both as to scratching and general appearance. Nodulized nickel deposits were traced back to improper polishing of base.

George Hogaboom of Hanson-Van Winkle-Munning Co., presented a thought-provoking talk on "Some Overlooked Factors in Electroplating."

An inventory of what has been done in plating to date shows zinc deposited at 1000 amps./sq. ft., copper at 1000, tin at 400, and nickel at 400 amps. per sq. ft. However, a more thorough study of causes, and not only effects, would be desirable. Causes of plate thickness distribution were discussed. Factors were anode to cathode ratio, anode films and secondary products, polarization, etc.

Effect of applied voltage, apart from merely causing current flow, on crystal structure is a little known field. Insoluble anodes, poor anode contacts, impurities in the solution, all have their effect. The interesting role of a "dead" anode or metal piece in the path of current, similar to an intermediate electrode in series copper refining, proved to be a new idea for many listeners. This cause often has a marked effect on plate thickness distribution. Throwing power and its measurement were discussed at some length, and limitations as

well as advantages of the known methods of measuring were given. Mr. Hogaboom presented a new method for throwing power measurement, using a V shaped cathode. Effect of concentration convection currents, on throwing power and effect of anode-cathode distance of a setup were given. For one of the experiments run, increasing the anode distance from 6 to 22 inches produced no appreciable increase in throwing power.

"Patents in the Plating Industry," by Gustaf Soderberg, of the Udylite Co., helped to straighten out this very complex and little known field for the plater. Just what constitutes invention, what things are patentable, procedure in obtaining a patent and common pitfalls in handling patent work, were explained. Patents are not considered valid until so held by an actual court decision. Patent litigation is exceedingly expensive, an average interference suit running about $10,000. For a patent to be granted, there must be a definite invention, of which there has been no prior public use or published information, and the inventor must show diligence in reduction to practice. Patents are divided into two parts, the specification and the claims. Most important are the claims, each one of which can be considered a separate patent. As patents are a subject of increasing importance to the plater, this paper was well received.

Al Hermansen, of the Globe-Union Co., again detoured the group away from the technical aspects of plating in his talk on "Costs in the Plating Room." So much is heard these days of overhead expenses that a breakdown of this item proved of considerable interest. The largest item was taxation. Unemployment taxes, social security, excise tax, undistributed earnings tax, real estate tax, inventory tax, were just a few mentioned. Factory overhead tax included office help, executives' and supervision salaries, office supplies, etc. In the shop one of the biggest and often overlooked items was tool and die maintenance. Mr. Hermansen showed figures of applied labor cost and tool maintenance. On several jobs the maintenance was several times the applied labor. He pleaded for a more thorough study of the various items that make up a final factory cost, since it directly or indirectly affects our jobs.

This was Milwaukee Branch's Fourth Annual Educational Session, although only the second which also included a dinner dance in the evening. These Milwaukee affairs are growing every year in attendance and character of programs presented. Platers from a wide area of the Middle West attended, notably from the Chicago area.

PHIL J. RITZENTHALER

METAL FINISHING FIRM EXPANDS

Henry Nelkin, Inc., electroplaters and polishers, 128 Mott Street, New York City, have once again expanded their business. They have added another floor to their plant and installed two new departments: baking and enameling and tumbling.

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The Tumbling Department includes six new cadmium plating barrels, six modern nickel tumbling barrels and four of the latest model burnishing barrels.

Henry Nelkin, Inc., started as a small business twenty-six years ago. Within the last six years they have enlarged their plant to meet the changing trends of industry. The business is still actively managed by Mr. Henry Nelkin and Mr. Louis Schoenwetter. Their sons, Julian Nelkin and Herbert Schoenwetter, have been brought up in the business and occupy key positions. Their specialities are lamps and lighting fixtures, photographic parts, as well as all types of beauty parlor equipment.

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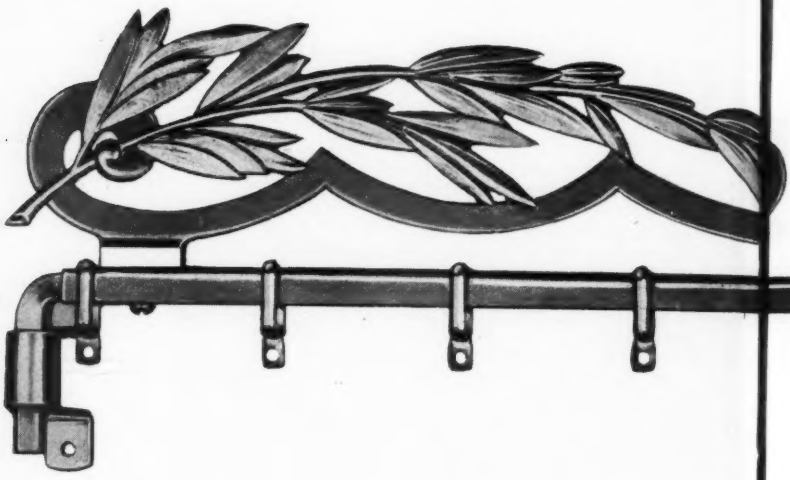

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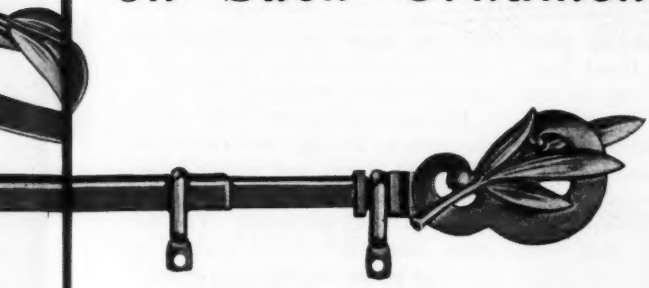

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Business and Social News

BRANCH NEWS

Educational Activities

AMERICAN ELECTROPLATERS' SOCIETY

Boston Branch met Thursday, May the second, at the Manger Hotel, Boston, with President DeLorme in the chair.

Harlan M. Gale of Brookline, Mass., was elected an associate member.

Six new applications were received as follows: Philip H. Beach, Newtonville, associate; Lloyd Axelrod, Brighton, associate; Robert C. Potter, Worcester, active; Robert L. Smith, Revere, active; Howard C. Cramer, Emmons Loom Harness Co., Lawrence, active; Charles W. Gore, N. E. Buff Co., South Boston, associate.

A report was made by the banquet committee and while not complete it was a success; a rising vote of thanks was given Joe Barron for the fine work done by him on the committee and to Ann Baker for the fine way she cared for the ladies in the afternoon.

Election of officers was held and the following were elected: President William Jones; vice-president, Al. Baker; secretary-treasurer Andrew W. Garrett; librarian, Arthur W. Collins; sergeant-at-arms, Edward F. Burke; board of managers, Charles O. Hardy, Harry J. Lack, and George H. Loeser.

The new officers were installed by Past President Louis A. Gale who did a fine job and gave the new officers some advice on what is expected of them the coming year. A vote of thanks was given him for his fine work.

A rising vote of thanks was also given the retiring president, Edward DeLorme, for the good work done by him in the past few years. He says that he will be around just the same to help out.

President Jones thanked the members and hoped they would cooperate with him in the coming year to make it one of the best the Branch will have.

Election of delegates to the convention were as follows: Andrew Garrett, Charles O. Hardy, and Arthur J. Mintie; alternates, Louis A. Gale, Calvin King, and Edward Jeveli. The delegates were instructed to make every effort to bring the 1941 convention to Boston.

We had Robert Green of the Alsop Manufacturing Co. of Connecticut as speaker. He explained the working of the filter press, what it can do, and how much solution it will pump; he then took it apart and as he put it together explained each part to the members. He was kept busy answering the questions of the members which were plenty and he was later given a vote of thanks for his very fine talk.

There will be a special meeting of the Branch June 20, after the convention. After a short discussion the meeting adjourned at 11 P. M.

A. W. GARRETT, *Secy.*

Wing your way to Dayton the Birthplace of Aviation

Waterbury Branch held its regular monthly meeting on April 12. The meeting was preceded by a dinner at 6:30 P. M. which was attended by about twenty and during which the usual spirit of good fellowship prevailed (aided by the presence of George Knecht among others).

About fifty were present at the meeting immediately following the dinner, Ellsworth Candee summarized the

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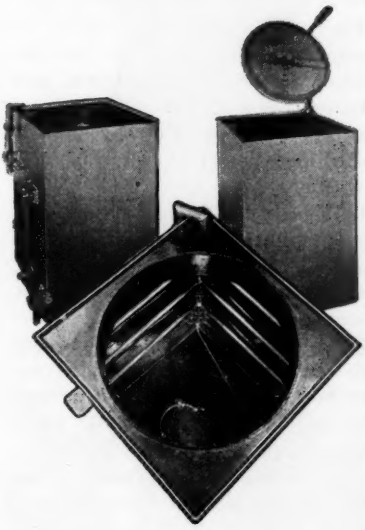

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progress of the Branch during the past year which included the addition of fourteen new members, and a series of business meetings at the homes of officers preceding the regular meetings. A sound financial condition was reported and a small surplus is expected to be added to the resources of the Branch at the end of the year.

The resignation of George Muscio as secretary-treasurer, due to business changes, was regretfully accepted, and the excellence of his service for the past year commented on. Everyone present wished him the best of luck in his new connections.

In reporting for the nominating committee, William Gray stated that the year had been a very successful one, and it was suggested that the present officers be elected for another year. Spencer Henn was nominated for secretary-treasurer to fill the place left vacant by George Muscio. Since there were no further nominations, Louis Lougee moved the election of the following: Ellsworth T. Candee, President; Ralph Colter, Vice-president; Spencer L. Henn, Secretary-treasurer; Earle W. Couch, Librarian; Tennant Elwin, George Dubpernell, William Gray, Board of managers.

The technical chairman, Ben McGai, then introduced the speaker of the evening, George Hogaboom, who spoke on "Some Overlooked Problems in Electroplating." Mr. Hogaboom expressed his pleasure at being with us again, and reminded us that he was an organizer and the first president of Waterbury Branch. He described in detail the "mass flow" type of agitation, and the high current densities which had been achieved in depositing various metals with this type of agitation which eliminates cathode polarization by means of movement of the solution adjacent to the cathode. Dr. Kasper's work at the Bureau of Standards on the effect of anode to cathode distance on throwing power and current distribution was described and results with a new type of bent cathode test for throwing power were given. Mr. Hogaboom also emphasized the importance of insulating films on the anode as the outstanding practical factor in anode polarization, and the need to increase the solubility of these films in controlling the solutions. A spirited discussion of these matters followed the talk, and Mr. Hogaboom was given a rising vote of thanks.

George Dubpernell also gave a brief review of the book *Corrosion of Metals* by McKay and Worthington, emphasizing the entertaining line drawings at the end of each chapter showing the activities of "Old Man Corrosion" and the usefulness of the comparative values for the corrosion of different

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metals under different conditions, all of these values being given in the same unit; i.e., milligrams per square decimeter per day.

President Candee reminded us of the Regional Meeting for New England to be held in Waterbury on April 27, at the Hotel Elton, and we hope to see you there.

SPENCER L. HENN, *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Toronto Branch met May 3 at the Winchester Hotel, temporary quarters for the joint meeting of the Buffalo and Toronto Branches, President Smith in the chair. The meeting got under way with the arrival of the Buffalo members, and after the regular routine of business including letters from Mr. Kennedy, Grand Rapids and Springfield Branches, President Smith welcomed the Buffalo members and introduced President Ruff. He spoke on behalf of the Buffalo members and in his usual good-natured way expressed regrets for arriving a little late, also saying that he was glad to be at the Toronto and Buffalo joint meeting and that the little strip of water between Rochester, Buffalo and Toronto could be overcome by drawing a circle connecting them; and making these joint affairs more frequent.

"Diffusion Studies of Copper-plated Zinc Die Castings" was the subject for the address to be given by Mr. F. F. Oplinger who found it impossible to be present. The paper was read by Mr. Schustik and Dr. Wernlund. This paper will be presented at the Dayton convention, so very little will be said about it here, except that it was most interesting and instructive.

Mr. Schustik answered many questions and a great discussion arose when Harry Bird asked the real meaning of

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the words, defusion and fusion. The participants in this were Dr. Wernlund, Dr. Burt Gerrens and Mr. John Acheson who finished the discussion by giving his version and then stating it was time for refreshments. Mr. Schustik proved an able speaker, explaining and showing on the slides the effect of heat treatments on die castings, of the degreaser from mild cleaners to harsher caustic soda. Thanks to Louis Schustik, Dr. Wernlund, and President Ruff, and all the Buffalo members including Roderick McGhee. Will ye no come back again?

JAMES S. CAIRNS, *Secy.*

Wing Your Way to Dayton
The Birthplace of Aviation

Cincinnati Branch of the A.E.S. met in the Hotel Metropole on Thursday, April 25, at 8:00 P. M. There were twenty-five members present. Election of officers was held at this meeting. Those elected were: Robert Knoepfler, president; Harry Misner, vice-president; Martin Gannon, Jr., recording secretary; Joseph Adler, treasurer; Frank Nordman, librarian.

The following were elected as delegates to the Convention to be held in Dayton: Owen T. Towner, Robert Knoepfler and Frank Nordman.

The following were elected as alternates: Harry Misner, Reuben Pawsat and George Lauman.

Mr. Joseph Adler reported that there were some excellent boards being prepared for the plated ware exhibit at Dayton. Our president, Mr. Robert Knoepfler, will preside at the sixth session of the 1940 Convention, and Mr. Frank Nordman has been appointed on the Exhibits Award Committee. Mr. Owen T. Towner will present a paper, "The Pickling of Metals for Electroplating," at the third session.

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Mr. G. P. Huntley of The Harshaw Chemical Company, who was the speaker of the evening, made a comparison of bright and dull nickel plating. This talk was well received and we will be glad to hear from him again.

MARTIN GANNON, JR., *Secy.*

Newark Branch A.E.S. met on Friday evening, April 19 at the Club Room of the Hotel Douglas. The meeting was called to order at 8:30 P. M. with President John Kotches presiding.

A communication from Grand Rapids Branch with reference to an amendment to the constitution was read and it was decided that this matter would be left to the discretion of the delegates to the 1940 Convention.

Application for Mr. Zachary Irenas to active membership was received.

Mr. H. Leroy Beaver of the Abbott

Ball Co., guest speaker for the evening, was next presented by Mr. Paul A. Oldam our librarian. His subject, "Barrel Finishing Methods," was very interesting. Mr. Beaver's talk covered numerous methods of barrel burnishing with all sorts of burnishing barrels and all kinds of burnishing materials. Many questions were asked by the members which the speaker answered with a great deal of satisfaction. At the conclusion he was giving a rising vote of thanks by the fifty-five members present.

We then elected officers for the ensuing year as follows: President, William T. Maguire; vice-president; William Bruhns; secretary and treasurer, George Wagner; librarian, Louis Donroe; Sargeant-at-arms, Roy Stout; board of managers—Horace Smith, John Kotches, Paul Oldam; delegates to the Convention—Horace Smith, Nelson Sievering, George Wagner; alternates to the Convention—Philip Sievering, Harmon S. Hunt, John Kotches. Meeting adjourned at 11 P. M.

GEORGE WAGNER, *Secy.*

Providence-Attleboro Branch meeting was held April 15, at the Park Hotel in Attleboro. While intended as essentially a social meeting, business and election of officers were included. Three new members were elected: George M. DeCamp, Walter L. Larson and Pierre B. Lonsbury. Five members were suspended: Thomas J. Critchley, Richard W. Eden, Hugh McGuinness, Roderick A. McIntire Alfred F. Reilly.

A very significant discussion occurred in the course of electing officers. The board of managers, acting as nominating committee, proposed the reelection of the current officers. One of these asked that a by-law be passed limiting tenure of office to two years consecutively, before he would consent to stand for reelection. This proposal was debated and it appeared that the sense of the meeting was to accept the premise but not to attempt to write a by-law on the subject. The discussion brought out the difficulty of proposing other names for nomination under the existing procedures and finally no elections were made without at least two nominees for the office. When the election proceeded on this basis none of the incumbents was returned to office as proposed by the nominating committee.

Frederick Allen and Robert MacLachlan were nominated for librarian. Mr. Allen was elected.

William F. Cahill, C. C. Chace, Donald Wood and Robert MacLachlan were nominated for president, Donald Wood was elected.

John Clarner, John MacLean and Robert MacLachlan were nominated for

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0.9—1.5 (copper, etc.)	silver)
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vice-president, Mr. Clarner was elected.

John MacLean and Robert MacLachlan were nominated for secretary-treasurer, Mr. MacLachlan was elected.

C. C. Chace, Pierre Lonsbury, James O'Brien, William F. Cahill, Charles A. Law , John MacLean and Alton Tapner were nominated for board of managers.

Mr. Chace, Mr. Cahill and Mr. MacLean were elected.

Delegates to the Dayton Convention were appointed: Robert MacLachlan, John Clarner and Donald Wood. Alternates: John MacLean, James Potter, John Garrick and Harry Narcus.

In view of the evidence that the usual method of electing officers could be dangerous to the welfare of the Branch, a committee was appointed to study and propose a procedure for the election of officers in the future. John Clarner, Robert MacLachlan and John MacLean comprise the committee.

DONALD WOOD, *Secy.*

Wing Your Way to Dayton
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Grand Rapids Branch. The guest speaker of the regular monthly meeting on April 11 was Dr. William Blum. Due to the large attendance the meeting was held in the English Room.

Dr. Blum reviewed the slides of color photographs taken of exposure panels at test stations, showing extent of corrosion on steel. Plated statistical evidence of exposure tests showed clearly what may be expected of definite thicknesses of electroplated coatings on brass, steel and zinc base die castings on exposure to the elements.

Means of testing electroplated coatings were discussed. It appears that the microscopic method is still the basis of reference for most stripping tests and for the magnetic method of thickness determination.

Dr. Blum showed a curve for correction of the calculation for thickness of chromium by spot method. The concentration of hydrochloric acid must be known and corrected, for considerable variations in readings are possible where acid concentrations vary even between S. G. 1.18 and 1.19.

C. W. SMITH, *Librarian*

Chicago Branch held its regular meeting on April 9, President J. W. Hanlon presiding. Messrs. A. L. Sandecki and M. K. Young were elected to membership.

The new officers for the ensuing year were elected as follows: President, M. H. Longfield; vice-president, C. Kelly; secretary, E. Lanz; board of managers —G. Jelinek, F. Herbst, R. Meyers; delegates to convention—R. Meyers, J. W. Hanlon, O. E. Servis; alter-

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nates to convention—M. Longfield, H. A. Gilbertson, F. Herbst.

In the absence of Mr. Weickmann, Mr. Romanoff acted as librarian and found the following questions in the box:

Q. What per cent of sulphuric acid is used for hard aluminum anodizing?

A. 15 to 18% by weight, temperature below 70° F. 12 to 15 volts, time about 40 minutes.

Q. Is there any danger of adding a large excess of any of the common surface tension depressants in nickel plating baths?

A. Yes. Causes peeling and foaming.

Q. What is the cause of brown or rainbow spots in chromium plating?

A. Too low sulphate ratio.

M. H. LONGFIELD, *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Los Angeles Branch held its regular meeting April 10, at the Roslyn Hotel.

President Ray Bray called the meeting to order at 8 P. M.

Financial report of the previous meeting was read and accepted.

Electrical transcriptions of talks by Dr. William Blum, Mr. F. A. Maurer, and Mr. William Broughton, which were recorded at the Annual Educational Session held March 30, 1940, were played at this meeting and enjoyed by all.

Mr. W. A. Anderson, information officer of N. S. W. Government Railways, was elected as an associate member.

The following members were elected to office: President, Don Bedwell; vice-president, Frank Rushton; secretary-treasurer, Ervin Frauenhoff; librarian, E. R. Holman; Sargeant-at-arms, C. C. McLaren; board of managers—Earl Coffin, E. Lamoureau, C. E. Thornton; convention delegates—Don Bedwell, E. Lamoureau, Ray Bray; alternates—E. Francis, E. Williams, John Merigold. Proxy—Chicago Branch.

Meeting adjourned 11 P. M.

RAYMOND SOLIVAN, *Secy.*

Toledo Branch of the A.E.S. held its annual meeting Thursday, April 4, in Room 224, of the Macomber Vocational High School.

The meeting was called to order by President Vic. Miner at 8:30 P. M.

Mr. Shank, chairman of the Exhibits Committee, reported that Toledo would be well represented at the convention. Mr. May, educational chairman, reported that the notes for the paper to be presented at the convention were ready, and it was decided to have

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Mr. Miner and Mr. May write the paper, he also reported that the sample plates were already polished and ready for plating.

At this time the chair made the following appointments: Messrs. Walter Weiker, Henry Schuldt, and Charles Vannorsdall, on the nominating committee, and Messrs. Walter Weiker, S. C. Shank, and John Stegeman on the auditing committee. The auditing committee reported that the secretary's, and treasurer's books checked, and all in good order. The following members were elected for the coming year: Vic. Miner, president; S. C. Shank, vice-president; Gaston Bergeman, secretary; Edward St. Arnand, treasurer; Harry E. Moser, librarian; for board of managers: Philip Hale, John Stegeman, Henry Schuldt, and Walter Weiker.

Mr. May was appointed chairman of the Educational Committee, and Mr. Shank chairman of the membership committee. Delegates and their alternates elected to go to the national convention at Dayton are: Henry Schuldt, Ward Hunlock, John Stegeman, Gaston Bergeman, and Jim Nagle, Jr. The meeting adjourned at 10:30 o'clock.

GASTON BERGEMAN, *Secy*

New York Branch held two scheduled meetings during the month of April, the last meetings of the fiscal year at their headquarters in the Conference Rooms of the Hotel Pennsylvania.

The first meeting of Friday, April 12, was a short business session followed by the monthly educational feature as arranged by the branch librarian, Dr. C. B. F. Young. On this occasion the speaker was Mr. H. Leroy Beaver of of Pennsylvania whose subject was "The Barrel Finishing of Metal Products." Mr. Beaver is a nationally known figure in the mechanical finishing industry with a wealth of experience and background covering many years in the allied industries. His extended discourse covered the many angles of mechanical finishing on metals and nonmetallic substances, the proccessing of same, types of mechanical containers, lubricants and abrasives and polishing compounds. His talk aroused a lively interest in his subject and at its conclusion he was extended a rising vote of thanks by the membership in attendance.

The second meeting of Friday, April 26, was a business meeting which included the election of Branch Officers

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for the ensuing year and the selection of delegates to the coming convention at Dayton in June. At the close of business Dr. Young conducted a round-table discussion on current plating problems for the membership present.

There were four applications filed for membership in the Branch at these meetings.

FRANK J. MACSTOKER, *Secy.*

Wing Your Way to Dayton
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Cleveland Branch held its May meeting on the Fourth in Room 5 at Hotel Cleveland. The weather was mild and we had an attendance of twenty-five.

Three applications for membership were received: Lorentz Dessicker of Bud Radio Inc. for active membership, and Richard Parks of General Industries of Elyria and Gordon Bennett Schaufele of Detroit Rex Products Co. for associate membership. William M. Smith ofWhite Sewing Machine and D. F. Mosher of The Lea Mfg. Co. were elected as associate members.

Mr. Joseph Singler, chairman of the Entertainment Committee reported progress on the dinner dance and also on the coming exhibits for the Dayton Convention.

Mr. Wm. Scott installed the following officers: President, P. R. Lyons; vice-president, Harold Seitz; secretary-treasurer, Frank J. Opatrny; librarian, John Honecker; board of managers—Fred Matts, W. E. O'Berg and J. O. Singler.

Mr. John Honecker was then asked for remarks on his plans for meetings for the ensuing year and he strongly urged the members to pass on to him any suggestions they might have in respect to talks and programs.

Refreshments were then served with a liberal addition of fine fellowship.

FRANK J. OPATRNY, *Secy.*

Springfield Branch held its regular meeting on April 22 at the Hotel Charles at 8:00 P.M. Thirty-two members and guests were present. A letter from the secretary of the Grand Rapids Branch, explaining their proposed amendment to the Constitution was read. After Mr. Kennedy explained the amendment it was voted to instruct our

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delegates to use their own judgment on the bill.

A motion was made and seconded that the Springfield Branch make known its desire to be host at the New England Regional Convention in 1940. Action on this motion will be postponed until the first meeting of the committee.

Mr. I. D. Niles then read the report of the nominating committee and the following officers were elected for the coming year: President, J. E. Costigan; vice-president, Arthur A. Copp; secretary-treasurer, D. S. Hartshorn, Jr.; librarian, Frank J. Clark; board of managers—Messrs. P. Prouty, W. Seidel and C. M. Hastie.

The following delegates to the Dayton Convention were appointed: Messrs T. J. Murray, A. A. Copp and W. Seidel Alternates, Messrs C. M. Hastie, A. Deghello and J. Mongeau.

The speaker of the evening, Mr. E. H. Bucy of the Zapon Co., Stamford, Conn., presented an interesting paper entitled "The Modernization of Finishes and Finishing Systems." Mr. Bucy explained the evolution of the modern single-coat finish from the three-coat finish formerly considered necessary. He explained that the durability of a finish is dependent upon the preparation of the basis metal and stated that phosphate treatments such as Bonderizing, Grenadizing, Parkerizing, etc., afford best mechanical and rust-inhibitive surfaces for enamels because they prevent the "creep" of rust from a scratched or abraded area.

The adhesion of these synthetics to zinc surfaces is poor because of the formation of zinc thalate, a white non-adherent powder. In addition Mr. Bucy explained the various methods used by the manufacturer to test the permanance, adhesion, etc., of baked enamels. He predicted that baked enamels of chlorinated rubber bases will soon be available to the manufacturers.

Mr. Bucy's talk was most interestingly presented and contained much valuable information.

The meeting was adjourned at 10:15.

D. S. HARTSHORN, JR., *Secy.*

Anderson Branch of the American Electroplaters' Society held their annual election meeting at the Guide Lamp Shack on April 23.

Mrs. Mary Fosnot of Daleville, Ind., served one of her famous chicken dinners with all the trimmings. Everyone enjoyed it and those who were unable

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to attend really missed a wonderful meal as well as a good time.

The eating championship finally ended in a tie with Bob Wagner and Chet Wilson cleaning up the chicken backs while Rex Oyler finished the four breasts that he had taken on his plate the first time the chicken went around. Several of the more polite members were seen covering their pile of chicken bones with their napkins. George Onksen was trying to borrow another napkin to finish covering his. Everyone else did pretty well, too, with Ed McKinney and Red Lowther acting as pace setters.

After everyone had given up trying to eat all that was on the table our business session got under way. The election of officers for the coming year was the first thing to come up and the following members were elected. President, Charles Hauri; vice-president, Mark Trook; secretary-treasurer, Rex Oyler; librarian, George Onksen; board of managers—James Minton, Ed McKinney, Robert Wagner; delegates to the Convention—Robert Wagner, George Onksen, William Castell; alternates—Charles Hauri, L. R. Hinsch, James Minton. The treasurer's report was then read and approved and several other matters of business were discussed. There being nothing further the business meeting was adjourned and several card games were started that lasted until everyone was ready to call it a night.

OTTO W. MCCALLESTER, *Secy.*

Detroit Branch. The April meeting drew an attendance of over two hundred members and visitors to hear Dr. William Blum, of the National Bureau of Standards. Evidently the vacation agreed with Dr. Blum as the comments were "that he was in fine form" and "the evening passed very quickly."

A brief outline of Dr. Blum's talk would be—the importance of specification plating, the standards set up as specifications, the testing now being done on panels to determine the thickness of plating required, and the use of the Magne-Gage as an indestructive means of testing.

The following slate was elected as officers of Detroit Branch for the coming year: President, W. L. Pinner; vice-president, Joseph E. Fritts; librarian, R. B. Saltonstall; secretary-treasurer, W. W. Wilson; board of managers—Charles R. Beaubien, Herbert Kennedy, W. W. McCord; delegates—William Phillips, A. B. Wilson, C. E. Heussner; alternate delegates—J. W. Higgins, Paul Amundsen, T. C. Eichstaedt.

The newly elected officers were installed by Past President Bert Lewis, and took the chair, running the meeting for the balance of the evening.

Prof. Wm. B. Gertz, of the Michigan School of Mining and Technology, was the speaker of the evening, and gave his listeners "something to think about" in his talk on "The Relationship of Education on Our Plating Industry." He touched upon one of the research problems his senior class is working on;

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namely the brittleness of copper wire when plated with nickel. Other important phases were, the reasons for failure of evening classes in plating techniques, more prepared discussion of papers presented at annual conventions by furnishing preprints as a guide for preparation of questions.

A. B. Wilson gave his lecture, illustrated by movies on "Making Bumpers and Anodes" in the Chevrolet Plant.

Announcement was of an innovation for June 7th meeting when President Pinner assisted by Vice-president James Fritt, Professor E. M. Baker, and W. M. Phillips will present both the theoretical and practical sides of "Discussion of Plate Distribution."

Bridgeport Branch met on Thursday, May 2, in the Chamber of Commerce Rooms at the Stratfield Hotel. There were twenty four members present. Our new president, John E. Charleson, presided and did a fine job of it and with the grace of an old-timer. (As most of us know, he gets around and knows his—er—onions.)

The report for the New England Regional Meeting, held at Waterbury, Connecticut, April 27, was acclaimed a success. Many prominent people were present and a good time was had by all of those who attended.

New Committees appointed by our President, John E. Charleson are as follows: *Sick Committee*—Eugene Phillips, George Karl, and George Wagstaff; *Membership Committee*—R. J. O'Connor, William Ehrencrona, Eugene Phillips, Fred Gotthardt, Charles McElroy, Elmer Monson.

A letter from the Grand Rapids Branch concerning the limitation of honorary members to ten was rejected. Delegates were instructed to talk this matter over at the General Convention to be held at Dayton, in June.

A letter from the Springfield Branch concerning Article II, Section II, Page 1, of our Constitution as to the proposed amendment was voted on in the affirmative.

The application of Anthony Turko, Bridgeport, Conn., as an associate member was received.

The opinion of the Branch is in favor of good speakers at our open meetings, with general constructive criticism and discussion. The why and why-not form of our discussions bring good values in the form of benefits and good qualities to the products we manufacture.

President John E. Charleson turned the meeting over to our librarian, Clarence C. Helmle, who spoke on "The Filtering of Cleaning Solutions." Much discussion was held on this subject and we were fortunate to have as a visitor Mr. Ralph McCahan, who took a large part in this part of the program. Mr. McCahan also spoke on cadmium plating, its crystal salt formation and what causes it. More information is needed on this subject and Mr. McCahan would be glad to hear from anyone who is interested.

The meeting was adjourned at 10:30 P.M.

JOSEPH G. STERLING, *Secy.*

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Binghamton - Syracuse Branch held its April meeting at the Cortland Hotel, Cortland, New York, Friday night, April 26.

This meeting was addressed by Captain Sullivan of the Divine Brothers Company, Utica, New York, who gave us a fine talk on setting up polishing wheels, glue vs. cement. He told us how to order glue to be sure of the right kind. He spoke particularly of the importance of heat control, soaking, absence of bacteria, care of glue pots and brushes in a very interesting talk.

Our Olean member, John Vitale, was inclined to be very technical and the discussion got quite warm in some spots. It might be a subconscious thought with some of us that the new Bright Plating has eliminated a lot of polishing but such is evidently not the case as these finishes, due to their high magnification of imperfections in the base, require considerable polishing before plating to insure a first-class job. The Branch thanks Captain Sullivan and hopes he can be with us again.

Meeting adjourned about 11:15 P.M.

GEORGE SIMMONS, *Secy.*

Wing Your Way to Dayton the Birthplace of Aviation

Dayton Branch held the regular meeting on Friday, May 3, at the Dayton Biltmore Hotel, headquarters for the coming Convention. Mr. Cochran our newly elected president presided.

One application for membership was read and voted to take the usual course.

Mr. Paul Gessler was appointed as Exhibits Chairman for the Dayton Branch.

Delegates were instructed on the amendments to the constitution to be voted on in June, with the exception of the one sponsored by the Springfield Branch. After quite a discussion of this amendment the secretary was instructed to write the secretary of the Springfield Branch for an interpretation of this proposed change.

Progress of work being done on the Convention was reviewed by Mr. Conley and the chairman of the various committees. Things are shaping up nicely, and from all indications a very enjoyable time awaits those who attend.

Following the adjournment of the business meeting, refreshments were served, this part of our meeting lasting until a very late hour.

CORLISS W. POWELL, *Secy.*

Rochester Branch held its regular monthly meeting at the Seneca Hotel. Regular business was transacted during which the following were elected as members: Mr. Harold R. Finch, Rochester, active; Mr. Carl Henry Blum, Fairport, N. Y., associate. The following name was ordered published: Mr. Donald C. Blum, 672 Mt. Read Blvd., Rochester, N. Y. associate. As we had no guest speaker for the evening the meeting was turned over into a general discussion of final plans for our annual meeting to be held on April 27 and then to a round table discussion of general problems. As there were several questions raised it was well on in the night when the meeting adjourned.

JUDSON R. ELSTER, *Secy.*

Hartford Branch of the A.E.S. held its regular meeting on Monday evening, April 15, at the Elk's Club, Bristol Conn.

The meeting was called to order at 8:15 with President Backus in the chair.

The officers for the coming year were elected as follows: President, J. W. Backus; vice-president, C. A. Kohrs; Secretary-Treasurer, A. W. Austin;

librarian, K. Bellinger; board of managers—E. A. Wieck, C. W. Peterson and Joseph E. Beloin.

Mr. John Harper, of the Jackson Buff Mfg. Co. of Long Island City, N. Y. was speaker for the evening, and gave a very fine talk on "Ventilation and Automatic Buffing." He had many samples of work finished upon automatic buffing machines, also some photographs of the various types of machines built for different work.

In conclusion he was given a rising vote of thanks.

The members present were served a fine lunch which was heartily enjoyed.

VERNON E. GRANT, *Secy.*

Buffalo Branch exchanged compliments with Toronto on Friday, May 3, by a return visit to that Branch.

The meeting was successful in every respect and Toronto is to be congratulated on the general excellence of its organization and the efficient manner in which its meetings are conducted under the able leadership of Mr. A. Smith.

The evening was concluded by refreshments. Toronto's hospitality in making the visitors welcome, had to be experienced to be believed. Food rationing may be felt to some extent in Great Britain but the liberal way in which the Canadian ale and all kinds of sandwiches were served makes the possibility of it ever reaching the Dominions seem very remote. If a Buffalo member was seen without a glass of this famous ale in his hand, he was immediately pounced upon by several of the local men who gently but firmly insisted on his having another. We thank the Toronto Branch and hope that we may again have the pleasure of their company in the early fall and in a like congenial atmosphere we may compare the merits of our respective ales.

The regular monthly meeting of the Buffalo Branch was held at the Bailey Bowling Academy on Friday, May 10. The meeting was entirely devoted to the election of officers, delegates to the convention and suggestions for the general welfare of the Branch. These suggestions will be acted upon during the next fiscal year.

The following members were elected to the principal offices: President, J. Ruff; vice-president, R. Fischer; secretary, R. McGhee; treasurer, F. Nowakowski; librarian, Dr. C. J. Wernlund; sargeant-at-arms, F. Wirges.

The program for next year was outlined by Librarian Dr. Wernlund.

The meeting adjourned at 10:30 p. m.

RODERICK MCGHEE, *Secy.*

Wing Your Way to Dayton
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Milwaukee Branch. The 308th regular meeting of the Milwaukee Branch was held at the Republican Hotel May 3, 1940.

Due to illness, Dan Wittig was not with us. All other officers were present.

The Banquet Committee made its final report on our Banquet, and was discharged with a rising vote of thanks.

The applications of James H. Durnford and Henry Sonnenshein were received, and ordered to take their regular course.

Phil Ritzenthaler installed the new officers for the year. President, Jack Geissman, vice-president Rodney Olsen; secretary-treasurer, Dexter Rhodes; librarian, Henry Bornitzke, board of managers—Dan Wittig, Al Hermansen, and William Geissman.

Mr. Orville Kocour explained and demonstrated the Magne Gage.

Refreshments were served after the meeting, which adjourned at 10:30 P.M.

DEXTER F. RHODES, *Secy.*

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St. Louis Branch held its regular meeting Friday May 3, at Central Y.M.C.A.

Dinner was served to thirty members after which the meeting was called to order by President Lubker.

On report of committee, Mr. Musick of the Booster Committee reported that the railroad fare and hotel rates for the coming convention would be very inexpensive, and if any one wanted hotel accommodations he would gladly have them reserved.

Exhibit Committee reported that there would be eight or ten of the members sending exhibits to the Convention.

Officers for the coming year were elected as follows: President, Joseph Humbrecht; vice-president, C. Simon; secretary-treasurer, Charles T. McGinley; librarian, John Vogt; board of managers—B. W. Daw, F. P. Menninges, Frank Horath; delegates to Convention—E. J. Musick, C. T. McGinley, J. Vogt; alternates—J. Humbrecht, F. P. Menninges, R. G. Kells.

Mr. Humbrecht then made a report on records he had kept on cost and maintaining Bright Nickel solution, these records covering a period of six weeks.

Mr. McIlenny, who was pinch hitting for Mr. Dunn of the Rex Products Co. of Detroit, spoke on "Rinsing of Work after Alkaline Cleaning." He stressed spray rinsing and also good results from the use of the non-siphoning nozzle. He drew some pictures of tanks and showed how the overflow should be placed to keep grease and dirt from the top of solution.

Mr. P. Pine of Harshaw Chemical Co. spoke on die casting and cleaning, stating that 50% of die casting should not reach plating Mr. Pine answered the many questions most satisfactorily.

Mr. McIlenny and Mr. Pine were given a rising vote of thanks, after which the meeting adjourned. Forty members were present.

C. T. McGINLEY, *Secy.*

Newark Branch. The regular meeting of the Newark Branch of the A.E.S. was held on Friday evening, May 3, 1940 at the Club Room of the Hotel Douglas, Newark, N. J. The meeting was called to order at 8:30 P. M. with our new president, Mr. William T. Maguire, in the chair. Other officers present were: vice-president, William Bruhns; secretary-treasurer, George Wagner; librarian, Louis Donroe; board of managers, Horace H. Smith, John B. Kotches, and Paul A. Oldam.

The minutes of the previous meeting were read and approved.

A communication from the Springfield Branch with reference to Article 2; Section 2; Page 1; of our Constitution was read and it was voted that this matter be left in the hands of the delegates to the convention.

Application for Mr. Herbert R. Sill of the Egyptian Lacquer Mfg. Co. to associate membership was voted to take the regular course.

Candidates for membership were then elected as follows: active, William Spence of N. J. Optical Co., associate, William P. Catucci, of United Laboratories, Louis E. Gehm of Magnuson Products Co. and P. H. Staub of Merck and Co.

Mr. Horace Smith then reported that about fifteen members from our Branch and our Ladies' Auxiliary attended the Regional Meeting at Waterbury on April 27.

Under unfinished business our President made the following quotation: "You may remember at our last meetint that our Branch went on record as not in favor of a third term although this may have been a mistake. The

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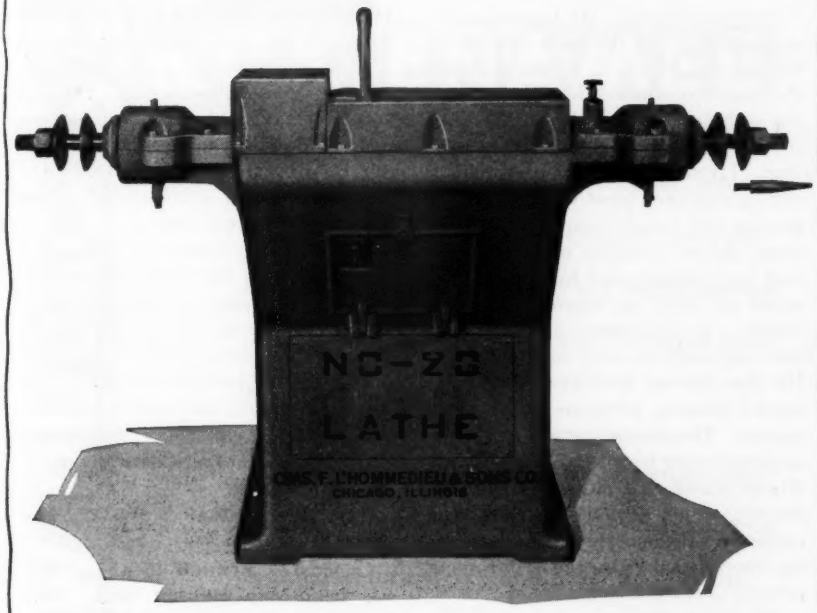

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Chair would like to entertain a motion that the Newark Branch of the American Electroplaters' Society go on record as being duly appreciative of the untiring efforts and the faithful service of its retiring officers, and show its appreciation by a rising vote of thanks." A rising vote of thanks was given.

Our new librarian, Mr. Louis Donroe, next presented as the guest speaker for the evening, Mr. E. C. Rinker of Oakite Products Co. whose subject was Cleaning of Steel. Mr. Rinker's talk dealt mostly with cleaning with reverse current. He stated that some companies are having very good results on both ferrous and non-ferrous metals in reverse current cleaning solutions. His talk was accompanied by stereoptican slides on which he showed specimens cleaned in degreasers and ordinary cleaning solutions with direct current. He then showed specimens cleaned in special cleaning solutions with reverse current. The reverse current specimens appeared to be by far the best and Mr. Rinker stated that in time to come all cleaning would be done by the reverse current operation. He was given a rising vote of thanks by the 47 members present at the meeting.

Mr. Paul Oldam again asked the members to please submit to him samples for the Platers' Exhibit to the Dayton Convention.

Meeting adjourned at 10:30 P. M.

GEORGE WAGNER, *Secy.*

Montreal Branch of the American Electroplaters' Society held their regular monthly meeting at the New Carlton Hotel, May 2. President Charles Doherty called the meeting to order at 8.30 with fifty percent of the members present. Mr. Walter Ramsbottom was present as a guest.

The members of the Branch learned with deep regret that Mr. Arthur Jerome was very ill and would be unable to act as secretary in the future.

Mr. Doherty, retiring president, thanked the members for their cooperation during his term of office and asked Mr. Feeley to install the new officers in their respective chairs. The officers were as follows; President, H. Harding; vice-president, H. S. Jordon; treasurer, R. E. Gordon; secretary, T. A. Willis; librarian, G. R. Davidson, and Messrs J. Reisenburg, C. Douglas and C. Doherty as board of managers.

The Membership Committee produced applications from Messrs. C. Bridges, and W. Ramsbottom. The applications were accepted.

The following members were elected as delegates for the 1940 Convention: Messrs. J. H. Feeley, H. Harding, H. S. Jordon and as alternates Messrs. R. Davidson, F. Lunn, and J. Reisenburg.

The meeting was then turned over to our librarian and after a very interesting discussion on vapor degreasing, President H. Harding closed the meeting at 11.15 p. m.

THOMAS A. WILLIS, *Secy.*

Lancaster Branch of the A.E.S. was held May 10th at Stahr Hall, Franklin & Marshall at 8:15 P.M. The meeting was attended by thirty-eight members and guests.

Mr. Elslager, Educational Committee, advised that plans were being made for the next-season lectures and requested suggestions from the members regarding their preferences for speakers, etc.

Mr. C. E. Brubaker, Finance Committee, reported that the various industries in Lancaster and vicinity were contacted and contributions were received from several of these. A total of $62.50 was received from this source. Mr. Brubaker was commended on his good job and the secretary was in-

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structed by a vote of the Society to acknowledge these contributions.

Mr. Shay, Publicity Committee, submitted his report and reported excellent cooperation from the local newspapers in printing our meeting announcements. Mr. Snow, one of our loyal Philadelphia supporters suggested that we mail our notices earlier as the out-of-town members were not receiving the notices until a day prior to the meeting night.

Mr. Schwalm, Exhibit Committee, reported that progress was being made with the exhibit of our Branch and again requested the various representatives to deliver their exhibits in the very near future.

The application of Mr. M. Dellinger was received.

The following were elected to membership. Messrs. Lloyd Mowrer, Richard Field, Arthur Ream and Ralph Boyd.

Due to the date of the National Convention it was voted to hold the June meeting one week later on June 21st. This meeting will be devoted to the reports of the delegates.

The various resolutions of the different chapters were read and after discussing these the delegates were instructed by vote of the Branch.

The following resolutions were read, Grand Rapids, Springfield, Los Angeles and Philadelphia Branches.

It was further agreed that the delegates were to use their judgment in voting for any business not discussed at this meeting.

Election of officers for the next year was held and the following were elected: President, Mr. L. A. Critchfield; vice-president, Norman J. Gebert; secretary-treasurer, H. L. Hovis; librarian, H. C. Brubaker; board of managers, C. E. Brubaker, K. H. McMillen, H. C. Kilheffer.

The following delegates to the National Convention were elected: Messrs Critchfield, Klunk and Hoenstine. Mr. Karl Nuss was elected as an alternate.

Following the business session we were privileged to have as our speaker Dr. Sanigar of the Philadelphia Branch who spoke on, "How to Prepare a Paper for Presentation." Dr. Sanigar very capably listed the items to be considered when preparing a paper and outlined the main topics or chapter headings as Introduction, Experimental Data, Results, Discussion, and Summary and conclusion.

Immediately following the conclusion of the lecture, Dr. Sanigar showed some very interesting scenes which he obtained during his visit to Norway and Sweden. The meeting adjourned at 11:30 P.M.

H. L. Hovis, *Secy.*

Chicago Branch held its meeting at the Atlantic Hotel on May 11. President J. W. Hanlon presiding.

President J. W. Hanlon reported the death of our member, Mr. R. Conlin.

The secretary-treasurer's annual report was read and accepted.

Our librarian gave a very descriptive outline on the analysis of flourides in a chromium plating bath.

The next meeting of Chicago Branch will be on June 1, instead of the regular night, in order to allow the members to leave for the Convention on the second Saturday, which would be the regular meeting time.

M. M. Longfield, *Secy.*

The Udylite Corporation, Detroit, Michigan, manufacturers of electroplating and polishing equipment and supplies, announces the removal of its Eastern district office from 30 East 42nd Street to 60 East 42nd Street, New York City. Mr. A. B. Hoefer is Eastern district manager.

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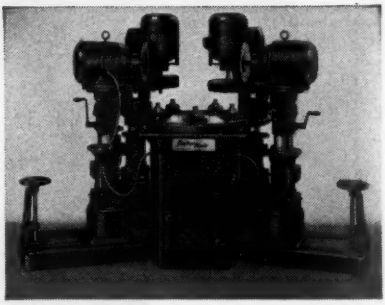

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NEWS ITEM

At the annual directors' and stock holders' meeting of the Udylite Corporation, Detroit, Michigan, manufacturers of electroplating and polishing equipment and supplies, the directors of the corporation elected Lawrence V. Nagle, vice-president. Other officials reelected are as follows: Charles Awkerman, board chairman; L. K. Lindahl, president; C. H. Reeme, vice-president and

LAWRENCE V. NAGLE

treasurer; Horace S. Maynard, secretary; A. L. Barak, assistant treasurer; John C. Moons, assistant secretary.

Mr. Nagle graduated from the Commerce and Finance Department of the University of Detroit in 1926. He joined the Udylite Corporation in 1932 after having been associated with several firms in a selling capacity. In 1937 he was appointed district sales manager of the Detroit area. Mr. Nagle will continue to direct sales in the Detroit district for the Udylite Corporation.

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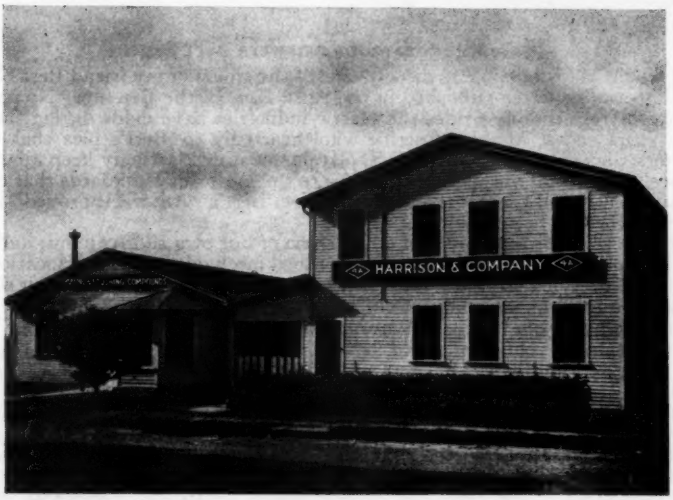

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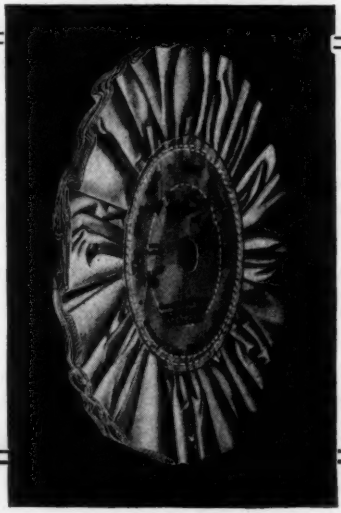

Type "K" Buff

George Simmons Answers Bert Sage

I would like if possible to dispel some of the gloom of my friend Bert Sage as outlined in his letter published in the April issue of the REVIEW. No one can deny the tremendous strides the plastic industries have made during the past few years and I would subscribe wholeheartedly to Bert's plea that we as platers, and more especially A.E.S. platers, must everlastingly keep at the job of seeing to it that our plating conforms to the most rigid standards that can be set up, so that in the not too distant future, Bert's "A.E.S. Approved" might become the hall mark of all plating.

However when we come to analyze some of our own shortcomings and why with all our solution control, accurately timed mechanism, and specifications we still have rusty parts, it is evident there must be some weak spots in our set-up. I personally think a great deal of the trouble is caused by the failure of us platers to notice the obvious. We are altogether too prone to blame everything on the solution. This should not be the case as every A.E.S. member ought to have his solution under chemical control either through the plant laboratory or by himself.

This knowledge is available to every A.E.S. member through attendance at his Branch Educational Sessions. Much emphasis is laid on solution control and rightly so, but it is clearly just as important to keep electrical contacts, racks, rheostats, tanks, and all working mechanical parts in as good condition as the solution. These being the obvious things, we are apt to overlook them.

I, for one plater, am quite content to let our scientist plater friends Dr. Meyer, Dr. Blum, George Hogaboom, et al., figure out "The amorphous metal postulation as a source of abortive proxility," to quote a recent published article on the subject of "Throwing Power." This is not intended as a criticism of such articles (I personally like them) but merely to point out that we should stay in our own field (and clean off the anode rods once in a while).

We should always have in mind that electrodeposition is a low voltage process and this in itself demands that every contact be rigid and positive. If we are going to meet the challenge of the "Plastic Army" we must definitely discard the old loosely wired and iron racking methods which, alas, are still being used in some plants I have been in recently. I am not a salesman of equipment, though our friends in that field are fully alive to their responsibilities and have done much to insure good contacts and the like, but the best bus bar made on a plating tank has to be cleaned off regularly to get the results the maker intended and engineered it for.

I happened to see the copy of *Life* Magazine which evidently gave Bert the jitters but the reaction in my mind was a little different; for instance, I saw hundreds of new chrome installations installed to chrome-plate the molds used in *making* these plastics. Incidentally this plating of molds has become quite an industry in itself as glass molds are also being very successfully chrome plated, saving the manufacturer thousands of dollars per year—perhaps that accounted for the stock market "up" Bert had the wishful thinking for.

Some of us platers can perhaps be excused for having some prejudices against plastics; however, I fail to see where any plastic can be quite as glamorous as some of our friend Mesle's Community Silverware, or a Quackenbush Nut Cracker Set (25c per set), or again some of Bert's own furniture parts in chrome and black.

It is not quite clear in my mind how an inventory of anode sales would do me or my company any good; I personally shall always consider the trend to be for better plating to meet the competition of something or other.

To sum up, if there is a threat to us as platers in the Plastic Industry, I for one am sure it is our own fault, I mean as individual platers. No, Bert, I am not pessimistic about our future, but merely hope that all our A.E.S. brethren are aware of the potential harm that can come to our profession if we fail to keep up with the lofty purpose of our Society, namely:

"A Society for the Advancement of the Science of Electroplating."

GEORGE SIMMONS

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PHILADELPHIA BRANCH RESOLUTION

In order to improve the A.E.S. MONTHLY REVIEW, better the arrangement of papers presented to the American Electroplaters' Society for publication, assure greater opportunity for full discussion of papers presented at the annual conventions, avoid duplication of copy, and, finally, to help electroplaters write more papers on the practical applications of electroplating; be it resolved that Article IV of the By-Laws of the American Electroplaters' Society be amended as follows to establish a Publications Committee:

Publications Committee:

A vice-president shall be chairman of and appoint the publications committee consisting of the Executive Secretary and three other members of the society.

The committee shall pass on the acceptability of all papers offered for publication in The MONTHLY REVIEW or for presentation to the annual convention and shall have sole authority to accept or reject papers, provided, however, that any member may appeal to the Executive Board against any decision of the committee in respect to a paper submitted by that member.

The committee shall review and edit all papers at the earliest possible date and offer to the writers thereof such helpful suggestions and criticisms as will lead to more interesting papers. The committee is empowered to submit papers to any society member, who is a competent critic, for his opinion.

The committee shall establish and announce a final date for acceptance of copy for the annual convention; limit the amount of material accepted for convention programs consistent with the length of program desired; and prepare and distribute preprints of convention papers to interested members sufficiently in advance of the convention meeting as to allow preparation of intelligent discussion.

March 27, 1940

Mr. W. J. R. Kennedy
93 Oak Grove Ave.,
Springfield, Mass.

Dear Mr. Kennedy:

By authority of the Members of the Supreme Society in our Branch, and the Branch itself, the following is to be published in both the April and May Issues of The MONTHLY REVIEW.

Amendment to
Article 2
Section 3: Honorary Members.

This membership shall only be conferred upon applicants who have been members in good standing for five years, and whose knowledge and service have added or will add to the general standing and welfare of the Society. Admission to be by majority vote of the Supreme Society at Annual Meetings. Any Branch desirous of having any member elected to Honorary Membership in the Supreme Society, shall submit the name of such person to the Executive Secretary before the first of April, together with appropriate history for qualification, both of which shall be published in the April and May issues of the REVIEW.

In our opinion, this new section is much clearer than the present one, furthermore the provision making it necessary to publish the name and history of applicants in both the April and May issues of The MONTHLY REVIEW will enable all delegates to familiarize themselves with the history in each case and be able to vote intelligently on each applicant at the Conventions.

This suggestion to strike out the present Section in the Constitution and to adopt the new one will be brought up at Dayton Convention by our delegate or proxy as the case may be.

Very truly yours,
RAYMOND SOLIVAN, *Secy.-Treas.*

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PROPOSED AMENDMENT TO ARTICLE II, SECTION III HONORARY MEMBERSHIP

Grand Rapids Branch of the A.E.S. feels that in the matter of honorary membership undue emphasis has been placed on the old age rather than on the other qualifications of proposed candidates.

We, therefore, propose that the following limitations be made to Part I, Article 2, Section 3 of the constitution: That the number of honorary members be limited to 10.

(Signed) CHARLES WHALLEY
Secretary, Grand Rapids Branch

February 10, 1940

AMENDMENT TO ARTICLE II, SECTION II

In order to clear up a misunderstanding in the minds of some of our members regarding Article II, Section II, Page 1, of the Constitution and By-laws which reads: Membership. Active Members. "These shall consist of three (3) active members in good standing from each branch Society that is in good standing, who have been elected to the Supreme Society in the manner required in the By-laws. Each elected officer of the Society must be elected by his branch as a delegate."

Springfield Branch has voted to amend the last sentence of Section II to read as follows: "Each elected officer of the Society must be returned by his branch as a delegate."

(Signed) DERICK S. HARTSHORN
Secretary, Springfield Branch

March 25, 1940

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